

State of Arizona Exceptional Event Documentation of a High Wind Dust Event PM₁₀ Exceedance on April 25, 2016 in the Maricopa County PM₁₀ Nonattainment Area

Produced by:

Arizona Department of Environmental Quality
Maricopa County Air Quality Department
Maricopa Association of Governments

Final Report
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**Widespread Windblown Dust as Captured by the
South Mountain Visibility Camera at 3:30 PM on April 25, 2016**

Table of Contents

I. INTRODUCTION	1
Summary of the Exceptional Event.....	1
Statutory and Regulatory Requirements.....	2
Procedural Requirements.....	3
Mitigation Requirements	4
II. CONCEPTUAL MODEL.....	5
Geographic Setting and Climate.....	5
Geographic Setting.....	5
Climate	8
Cold Front High Wind Dust Event Summary	9
III. CLEAR CAUSAL RELATIONSHIP	17
Introduction	17
Comparison of High Wind Dust Event Concentrations with Historical Concentrations	17
Chronological and Spatial Presentation of Wind, Visibility, and PM ₁₀ Concentration Data During the High Wind Dust Event in the Maricopa County PM ₁₀ Nonattainment Area	21
Visibility Photos	47
Conclusion.....	48
IV. NATURAL EVENT AND NOT REASONABLY CONTROLLABLE OR PREVENTABLE CRITERIA.....	49
Natural Event.....	49
Not Reasonably Controllable or Preventable	49
Identification of Natural and Anthropogenic Sources of Emissions.....	51
Identification of Relevant Control Measures	52
Implementation and Enforcement of Control Measures	54
Conclusion	56
V. SUMMARY CONCLUSION	57

List of Tables

Table 1-1. PM ₁₀ Monitors Affected by the High Wind Dust Event.....	1
Table 2-1. 24-Hour Average PM ₁₀ Concentrations (µg/m ³) at Maricopa County and PM ₁₀ Nonattainment Area Monitors on April 18-May 2, 2016.	13
Table 3-1. Data Sets Used in the Creation of Chronological and Spatial Maps.	21
Table 4-1. Control Measures included in the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area.	53

List of Figures

Figure 2-1. Maricopa County PM ₁₀ nonattainment area geographic setting and PM ₁₀ monitor locations. .	6
Figure 2-2. Drainage basins of the State of Arizona.	7
Figure 2-3 Phoenix monthly precipitation (top) and maximum temperature (bottom) climatology (source: National Weather Service).	8
Figure 2-4. Location of trough and cold front as of 4:00 AM Arizona time on April 25, 2016 (NOAA Daily Weather Map).	10
Figure 2-5. 500-Millibar wind field at 4:00 AM Arizona time on April 25, 2016. (NOAA Daily Weather Map).	11
Figure 2-6. Western states drought monitor as of April 19, 2016.	12
Figure 2-7. 24-hour average PM ₁₀ concentrations (µg/m ³) at Maricopa County and nonattainment area monitors on April 18-May 2, 2016.	14
Figure 2-8. Diurnal profile of monitors on April 25, 2016.	15
Figure 2-9. Hourly average PM ₁₀ concentrations, maximum hourly 5-minute average wind speeds, and maximum hourly gusts as recorded at the exceeding West 43 rd Avenue monitor.	16
Figure 3-1. Plot of 24-hour average PM ₁₀ concentrations at the West 43 rd Avenue monitor, January 2011 – September 2016.	19
Figure 3-2. Plot of annual hourly average PM ₁₀ concentrations (1/1/2011 – 12/31/2015), hourly average PM ₁₀ concentrations in April (2011 – 2015), and diurnal PM ₁₀ concentrations at the West 43 rd Avenue monitor on the April 25, 2016 high wind dust event day.	20
Figure 3-3. April 25, 2016, 8:00 AM – 8:30 AM.	22
Figure 3-4. April 25, 2016, 8:30 AM – 9:00 AM.	23
Figure 3-5. April 25, 2016, 9:00 AM – 9:30 AM.	24
Figure 3-6. April 25, 2016, 9:30 AM – 10:00 AM.	25
Figure 3-7. April 25, 2016, 10:00 AM – 10:30 AM.	26
Figure 3-8. April 25, 2016, 10:30 AM – 11:00 AM.	27
Figure 3-9. April 25, 2016, 11:00 AM – 11:30 AM.	28
Figure 3-10. April 25, 2016, 11:30 AM – 12:00 PM.	29
Figure 3-11. April 25, 2016, 12:00 PM – 12:30 PM.	30
Figure 3-12. April 25, 2016, 12:30 PM – 1:00 PM.	31
Figure 3-13. April 25, 2016, 1:00 PM – 1:30 PM.	32
Figure 3-14. April 25, 2016, 1:30 PM – 2:00 PM.	33
Figure 3-15. April 25, 2016, 2:00 PM – 2:30 PM.	34
Figure 3-16. April 25, 2016, 2:30 PM – 3:00 PM.	35
Figure 3-17. April 25, 2016, 3:00 PM – 3:30 PM.	36

List of Figures (continued)

Figure 3-18. April 25, 2016, 3:30 PM – 4:00 PM.....	37
Figure 3-19. April 25, 2016, 4:00 PM – 4:30 PM.....	38
Figure 3-20. April 25, 2016, 4:30 PM – 5:00 PM.....	39
Figure 3-21. April 25, 2016, 5:00 PM – 5:30 PM.....	40
Figure 3-22. April 25, 2016, 5:30 PM – 6:00 PM.....	41
Figure 3-23. April 25, 2016, 6:00 PM – 6:30 PM.....	42
Figure 3-24. April 25, 2016, 6:30 PM – 7:00 PM.....	43
Figure 3-25. April 25, 2016, 7:00 PM – 7:30 PM.....	44
Figure 3-26. April 25, 2016, 7:30 PM – 8:00 PM.....	45
Figure 3-27. April 25, 2016, 8:00 PM – 8:30 PM.....	46
Figure 3-28. Visibility photos on April 25, 2016 at 7:15 AM and 3:30 PM, respectively.	47
Figure 4-1. Aerial photo of the immediate area upwind of the exceeding West 43rd Avenue monitor.	52

List of Appendices

Appendix A – ADEQ Forecast Products

Appendix B – NWS Meteorological Observations

Appendix C – Notice of Public Comment Period

Appendix D – Exceptional Event Initial Notification Form

I. INTRODUCTION

This documentation is being submitted to the Environmental Protection Agency (EPA) to demonstrate that an exceedance of the 24-hour PM₁₀ standard at the West 43rd Avenue monitor in the Maricopa County PM₁₀ nonattainment area on April 25, 2016 should be excluded from use in determinations of exceedances or violations of the 24-hour PM₁₀ National Ambient Air Quality Standards (NAAQS) as an exceptional event caused by a high wind dust event. This documentation serves to meet the requirements of Clean Air Act Section 319(b) (Air quality monitoring data influenced by exceptional events) and the EPA final rule, *Treatment of Data Influenced by Exceptional Events* (81 FR 68216), as codified in 40 CFR Sections 50.1 and 50.14. Additionally, state and local agencies are in the process of developing a mitigation plan for the Maricopa County PM₁₀ nonattainment area to meet the requirements of 40 CFR Section 51.930. The mitigation plan will be submitted to EPA by September 30, 2018, as required by 40 CFR Section 51.930(b)(3).

Summary of the Exceptional Event

On April 25, 2016, a dry cold front moved through the Maricopa County PM₁₀ nonattainment area bringing strong and gusty southwest winds that created a high wind dust event in the region. The National Weather Service issued both a high wind advisory and a blowing dust advisory for the region as a result of the passing cold front. The advisories predicted sustained winds of 20 to 30 mph with gusts of 40 to 45 mph, and localized visibilities as low as 1 mile. Broad regional visibility degradation was expected to persist throughout the afternoon and into the evening hours. Nonattainment area monitors recorded sustained southwesterly winds above 25 mph and gusts above 40 mph at multiple sites.

Within the nonattainment area all monitors experienced a substantial increase in PM₁₀ concentrations as a result of the passing cold front. 24-hour average concentrations on April 25, 2016 in the nonattainment area were approximately 3 to 6 times higher than concentrations recorded on April 24, 2016. PM₁₀ concentrations were elevated throughout the afternoon and into the early evening in response to the high winds generated by the passing cold front, but were highest when the winds were strongest. One nonattainment area monitor (West 43rd Avenue) exceeded the 24-hour PM₁₀ standard as a result of the high wind dust event as listed in Table 1-1. Multiple source areas were identified as contributing to the windblown dust that caused the high and exceeding PM₁₀ concentrations, primarily including the natural, desert areas of Maricopa County, western Arizona and southeastern California. For the limited areas within the Maricopa County PM₁₀ nonattainment area that are anthropogenic sources of windblown dust, reasonable controls at these areas were overwhelmed by the strength of sustained winds which exceeded 25 mph at several locations within the nonattainment area.

Table 1-1. PM₁₀ Monitors Affected by the High Wind Dust Event.

Monitor Name	County	Operating Agency	Monitor ID	Exceeding 24-Hour PM ₁₀ Concentration
West 43rd Avenue	Maricopa	Maricopa County Air Quality Department	04-013-4009	172 µg/m ³

Statutory and Regulatory Requirements

Clean Air Act Section 319(b) defines an exceptional event as an event that:

- (i) affects air quality;
- (ii) is not reasonably controllable or preventable.;
- (iii) is an event caused by human activity that is unlikely to recur at a particular location or a natural event; and
- (iv) is determined by the Administrator through the process established in the regulations promulgated under paragraph (2) [Regulations] to be an exceptional event.

EPA regulation in 40 CFR Section 50.1(j) further defines an exceptional event as:

“...an event(s) and its resulting emissions that affect air quality in such a way that there exists a clear causal relationship between the specific event(s) and the monitored exceedance(s) or violation(s), is not reasonably controllable or preventable, is an event(s) caused by human activity that is unlikely to recur at a particular location or a natural event(s), and is determined by the Administrator in accordance with 40 CFR 50.14 to be an exceptional event. It does not include air pollution relating to source noncompliance. Stagnation of air masses and meteorological inversions do not directly cause pollutant emissions and are not exceptional events. Meteorological events involving high temperatures or lack of precipitation (*i.e.*, severe, extreme or exceptional drought) also do not directly cause pollutant emissions and are not considered exceptional events. However, conditions involving high temperatures or lack of precipitation may promote occurrences of particular types of exceptional events, such as wildfires or high wind events, which do directly cause emissions.”

EPA regulation in 40 CFR Section 50.14(c)(3)(iv) states that a demonstration to justify the exclusion of monitor data as an exceptional event must include:

- (A) A narrative conceptual model that describes the event(s) causing the exceedance or violation and a discussion of how emissions from the event(s) led to the exceedance or violation at the affected monitor(s);
- (B) A demonstration that the event affected air quality in such a way that there exists a clear causal relationship between the specific event and the monitored exceedance or violation;
- (C) Analyses comparing the claimed event-influenced concentration(s) to concentrations at the same monitoring site at other times to support the requirement at paragraph (c)(3)(iv)(B) [clear causal relationship] of this section. The Administrator shall not require a State to prove a specific percentile point in the distribution of data;
- (D) A demonstration that the event was both not reasonably controllable and not reasonably preventable; and
- (E) A demonstration that the event was a human activity that is unlikely to recur at a particular location or was a natural event.

Additionally, specific regulatory requirements related to demonstrations for high wind dust events are included in 40 CFR Section 50.14(b)(5). Details on how the statutory and regulatory requirements are addressed in this documentation are presented in the bulleted list below:

- Chapter II of this assessment includes a narrative conceptual model that describes the genesis of the high wind dust event and how PM₁₀ emissions from the high wind dust event caused the PM₁₀ exceedance on April 25, 2016 in the Maricopa County nonattainment area.
- Chapter III provides a detailed body of evidence that the event affected air quality through the clear causal relationship between the PM₁₀ emissions from the high wind dust event and the exceedance at the West 43rd Avenue monitor in the Maricopa County PM₁₀ nonattainment area. Section III also includes an analysis comparing the event-influenced exceeding PM₁₀ concentration at the West 43rd Avenue monitor to historical PM₁₀ concentrations at the monitor.
- Chapter IV presents evidence that the high wind dust event was a natural event and that the high wind dust event was neither reasonably controllable nor preventable.
- Chapter V includes a summary conclusion of the evidence presented in Chapters II-IV.

Procedural Requirements

This procedural requirements for submitting a demonstration to EPA for an exceptional event are included in 40 CFR Section 50.14(c). The procedural requirements include the schedules and procedures for notifying the public when an event occurs; for providing EPA with the initial notification of a potential exceptional event; and for documenting the public comment process. Specific procedural requirements are presented below:

- 40 CFR Section 50.14(c)(1)(i) – Public notification that event was occurring:

The Arizona Department of Environmental Quality (ADEQ) issued an ensemble air quality forecast for the Greater Phoenix area on April 24, 2016 and a dust control forecast for Maricopa County that discuss the possibility of blowing dust and elevated PM₁₀ concentrations from the approaching cold front and trough. The forecast products that were issued on April 24-26, 2016 are included in Appendix A.

- 40 CFR Section 50.14(c)(2)(i) – Initial notification of potential exceptional event by creating an initial event description and flagging the associated data that have been submitted to the AQS database:

The Maricopa County Air Quality Department has created an initial event description (high wind dust event) and flagged the associated air quality monitoring data for April 25, 2016 as an exceptional event in AQS. The following monitor has been flagged as exceeding the PM₁₀ standard on April 25, 2016 as a result of a high wind dust event:

West 43rd Avenue (04-013-4009)

- 40 CFR Section 50.14(c)(2)(i)(A) – Regular communication with the EPA Regional office to identify data that have been potentially influenced by an exceptional event, to determine whether the identified data may affect a regulatory determination and to discuss whether the State should develop and submit an exceptional events demonstration:

ADEQ began initial discussions with EPA about this event on December 14, 2016. From that date, frequent discussion continued with EPA on the development of documentation needed to support the event. ADEQ submitted formal initial notification of the April 25, 2016 high wind dust event to EPA Region IX on December 22, 2016.

- 40 CFR Section 50.14(c)(2)(i)(B) – For data that may affect an anticipated regulatory determination or where circumstances otherwise compel EPA to prioritize the resulting demonstration, EPA shall respond to the State’s initial notification with a demonstration due date:

EPA did not provide a due date for this demonstration.

- 40 CFR Section 50.14(c)(2)(i)(C) – EPA may waive the initial notification of potential exceptional event process on a case-by-case basis:

EPA did not waive the initial notification of potential exceptional event process.

- 40 CFR Section 50.14(c)(3)(v) – With submission of the demonstration containing the elements in 40 CFR Section 50.14(c)(3)(iv), the State must document that a public comment process was followed, submit any public comments received, and address in the submission to EPA those comments disputing or contradicting factual evidence provided in the demonstration:

ADEQ posted this assessment report on the ADEQ webpage and placed a hardcopy of the report in the ADEQ Records Management Center for public review. ADEQ opened a 30-day public comment period on July 31, 2017. A copy of the public notice certification, along with any comments received and responses to those comments, will be submitted to EPA, consistent with the requirements of 40 CFR Section 50.14(c)(3)(v).

Mitigation Requirements

Per the requirements of 40 CFR Section 51.930(b)(1)(B)(ii), EPA provided written notification in the Federal Register notice for the EPA final rule, *Treatment of Data Influenced by Exceptional Events* (81 FR 68216), that the Maricopa County PM₁₀ nonattainment area is required to develop a mitigation plan for high wind dust events that satisfy the requirements of 40 CFR Section 51.930(b)(2). A high wind dust event mitigation plan for the Maricopa County PM₁₀ nonattainment area is required to be submitted to EPA by September 30, 2018. State and local agencies are in the process of developing the mitigation plan. The documentation for the April 25, 2016 high wind dust event is being submitted to EPA before a mitigation plan for the Maricopa County PM₁₀ nonattainment area is in place as allowed under 40 CFR Section 50.14(b)(9)(ii)(B).

II. CONCEPTUAL MODEL

Geographic Setting and Climate

Geographic Setting

The Maricopa County PM₁₀ nonattainment area is located in the Salt River Valley in south-central Arizona. It lies at a mean elevation of 1,090 feet above mean sea level (msl) in the northeastern part of the Sonoran Desert. Other than the mountains in and around the area, the topography of the area is generally flat. The area is surrounded by the McDowell Mountains (~4,200 ft msl) to the northeast, the foothills of the Bradshaw (~7,900 ft msl) and Mazatzal (~7,900 ft msl) ranges to the north, the White Tank Mountains (~4,500 ft msl) to the west, the Sierra Estrella (~4,450 ft msl) to the southwest, and the Superstition Mountains (~5,000 ft msl) far to the east. Within the area are the Phoenix Mountains (~2,600 ft msl) and South Mountain (~2,600 ft msl). Current development is pushing north, west, and south into Pinal County.

The PM₁₀ nonattainment area contains a fairly dense network of PM₁₀ monitors throughout the area, with a much less dense network of monitors located throughout the rest of the state. Figure 2–1 shows the general geographic setting of the nonattainment area, as well as the locations of PM₁₀ monitors in the nonattainment area and throughout the state.

Figure 2–2 depicts the drainage systems or watersheds for the State of Arizona. Many of the rivers that form Arizona's drainage system are dry for most of the year and, consequently, are sources of silt and fine soils that become suspended and add to regional PM₁₀ loadings during high wind events. Much of this alluvial matter and fine soil is deposited in the low lying areas of central and southern Arizona, with larger depositional areas focused in and around the confluences of dry river channels.

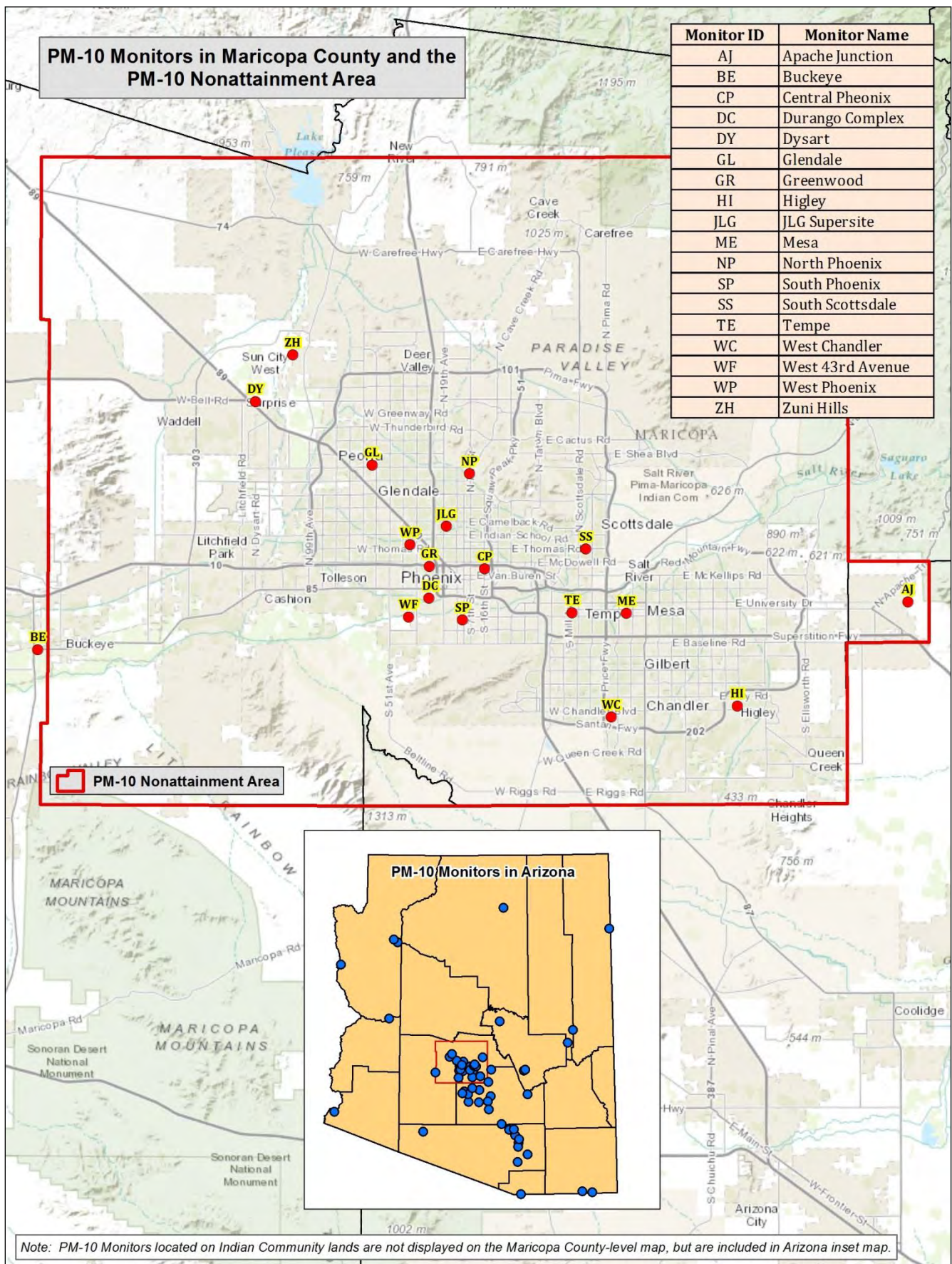


Figure 2-1. Maricopa County PM₁₀ nonattainment area geographic setting and PM₁₀ monitor locations.

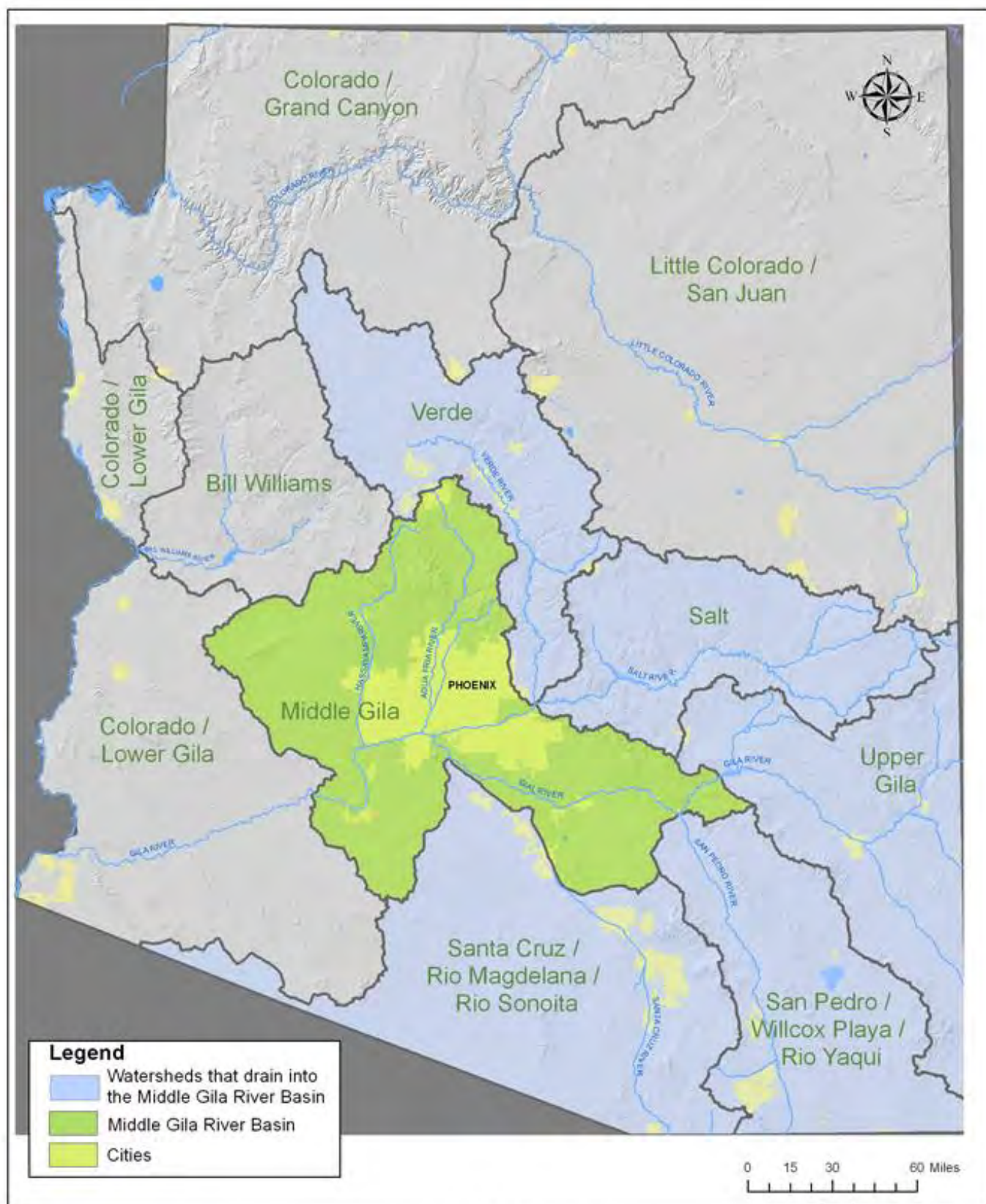


Figure 2-2. Drainage basins of the State of Arizona.

Climate

The Maricopa County PM₁₀ nonattainment area has an arid climate, with very hot summers and temperate winters. The average summer high temperature is among the hottest of any populated area in the United States. The temperature reaches or exceeds 100°F an average of 110 days during the year and highs top 110°F an average of 18 days during the year. The area receives an average of 7.66 inches of rain per year.

Precipitation is sparse during the first part of the summer, but the influx of monsoonal moisture, which generally begins in early July and lasts until mid-September, raises humidity levels and can cause heavy localized precipitation and flooding. Although thunderstorms are possible at any time of the year, they are most common during the monsoon season from July to mid-September as humid air is advected from the Gulf of California, Gulf of Mexico, and large thunderstorm complexes from the Sierra Madre Occidental Mountains in Mexico. This influx in moisture, combined with intense solar heating, often creates a very unstable environment that is ripe for thunderstorm development. These thunderstorms can bring strong winds and blowing dust, large hail, and heavy rain. Dust storms associated with these thunderstorms typically occur in the early part of the monsoon season (July) before soaking rains help keep soil particles bound to one another. However, depending on the amount of precipitation received during the monsoon season, extremely hot temperatures act to dry out the surface quickly, and dust storms can occur at any time. During the December through March period, winter storms moving inland from the Pacific Ocean can bring strong winds, blowing dust and significant rains throughout Arizona. This December – March time period, and July – August time period are typically the wettest parts of the year. Meanwhile, a distinct dry season occurs during the period April through June for the nonattainment area and the rest of Arizona. While these weather patterns describe the general climatology for the nonattainment area over a long period of time, the area and the entire state of Arizona is also prone to a high degree of variability in these weather patterns from year to year.

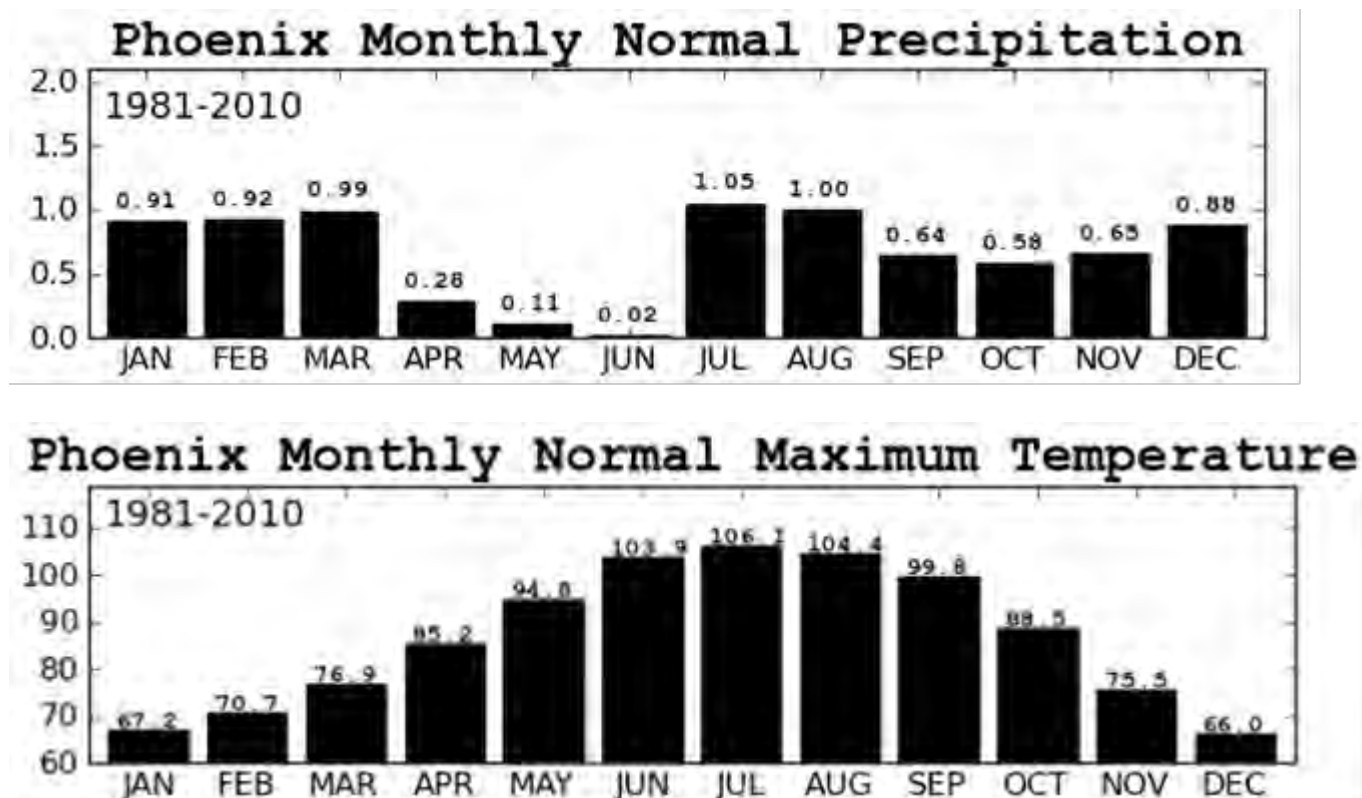


Figure 2-3 Phoenix monthly precipitation (top) and maximum temperature (bottom) climatology (source: National Weather Service).

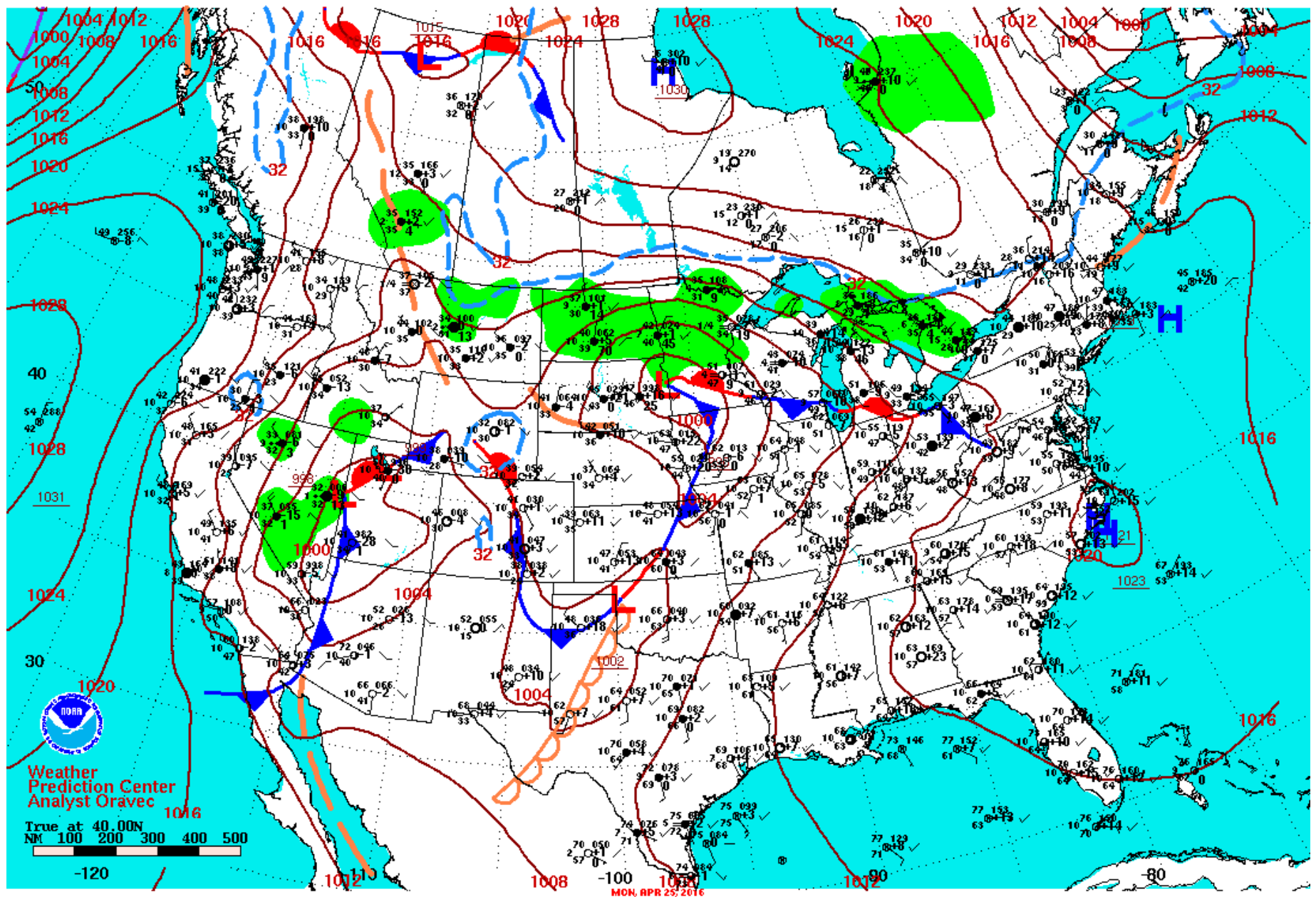
Cold Front High Wind Dust Event Summary

According to the National Weather Service (NWS), a dry and “potent spring trough and upper low” moved through the Maricopa County PM₁₀ nonattainment area throughout the day and into the evening of April 25, 2016 (See Appendix B). The NWS issued both a high wind advisory and a blowing dust advisory at 1:13 PM for the region as a result of the passing cold front. The advisories predicted sustained winds of 20 to 30 mph with gusts of 40 to 45 mph, and localized visibilities as low as 1 mile, remaining in effect until 8:44 PM. Broad regional visibility degradation was expected to persist throughout the afternoon and into the evening. Blowing dust was initially noted in the deserts of southeastern California around the area near Twenty-Nine Palms. This blowing dust, along with dust from the deserts of western Arizona, was transported into the nonattainment area with the passing cold front. The strong winds of the cold front also generated windblown dust in the desert and natural areas of Maricopa County and the PM₁₀ nonattainment area while overwhelming reasonable controls on local anthropogenic sources. Figure 2–4 displays the approaching trough and cold front into Arizona on April 25, 2016. Upper-air wind fields associated with the passing of the cold front are displayed in Figure 2–5.

By 11:00 AM, the windblown dust from the passing cold front was consistently resulting in elevated PM₁₀ concentrations throughout the nonattainment area. PM₁₀ concentrations peaked during the 1:00 PM to 2:00 PM time frame with five-minute concentrations as high as 1,033 µg/m³ within the nonattainment area. Concentrations remained elevated throughout the afternoon and into the early evening. The passage of the cold front generated sustained winds above 25 mph as recorded at NWS stations and Maricopa County Air Quality Department monitors throughout the nonattainment area in the afternoon hours. Accompanying gusts generally ranged from 30 to 45 mph. Winds of these magnitudes are sufficient to generate windblown dust from natural, undisturbed desert surfaces as well as overwhelm reasonable controls on anthropogenic sources of windblown dust. Visibilities as low as 5.0 miles were recorded at multiple NWS stations in the nonattainment area during peak PM₁₀ concentration periods. Visibility photos show the wide-spread nature of the windblown dust, especially during the 3:00 PM to 4:00 PM time frame. While only one PM₁₀ monitor (West 43rd Avenue) within the nonattainment area exceeded as a result of the windblown dust generated by the passing cold front, 24-hour average PM₁₀ concentrations on April 25, 2016 throughout the nonattainment area were approximately 3 to 6 times higher than concentrations recorded on April 24, 2016, indicating the regional impacts of the blowing dust. While it is possible that local anthropogenic sources of windblown dust (in concert with regional windblown dust) may have contributed to the exceedance at the West 43rd Avenue monitor, sustained wind speeds recorded in the nonattainment area and at the West 43rd Avenue monitor were above 25 mph for multiple periods, sufficient to overwhelm any reasonable controls that may have been in place on anthropogenic sources of windblown dust in the nonattainment area and near the exceeding monitor.

As seen in Figure 2–6, moderate to severe drought conditions throughout southeastern California and Arizona likely exacerbated the amount of dust the passing cold front was able to entrain. No precipitation was recorded at PM₁₀ nonattainment area NWS stations in conjunction with the passing of this dry cold front.

As a summary of the PM₁₀ concentrations during the event, Table 2–1 contains PM₁₀ concentration data at Maricopa County and nonattainment area monitors from April 18 – May 2, 2016, indicating the high levels of PM₁₀ seen on April 25, 2016 as compared to the prior and following week. Figure 2–7 displays those same 24-hour average PM₁₀ concentrations while Figure 2–8 contains the diurnal pattern of PM₁₀ at the Maricopa County and PM₁₀ nonattainment area monitors on April 25, 2016. Lastly, Figure 2–9 displays hourly average PM₁₀ concentrations, maximum hourly 5-minute wind speeds, and maximum hourly gusts as recorded at the exceeding West 43rd Avenue monitor.



Surface Weather Map and Station Weather at 7:00 A.M. E.S.T.

Figure 2-4. Location of trough and cold front as of 4:00 AM Arizona time on April 25, 2016 (NOAA Daily Weather Map).

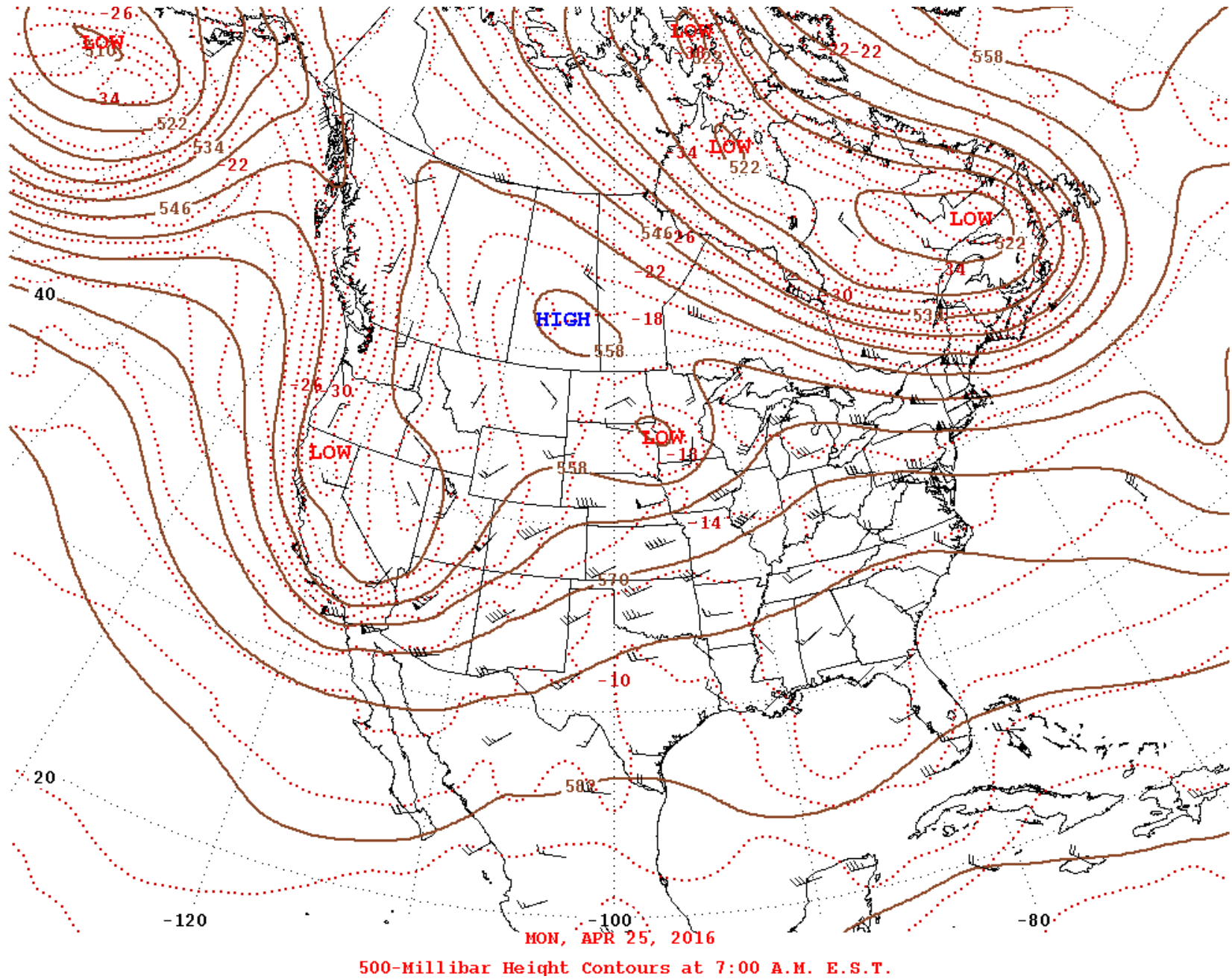
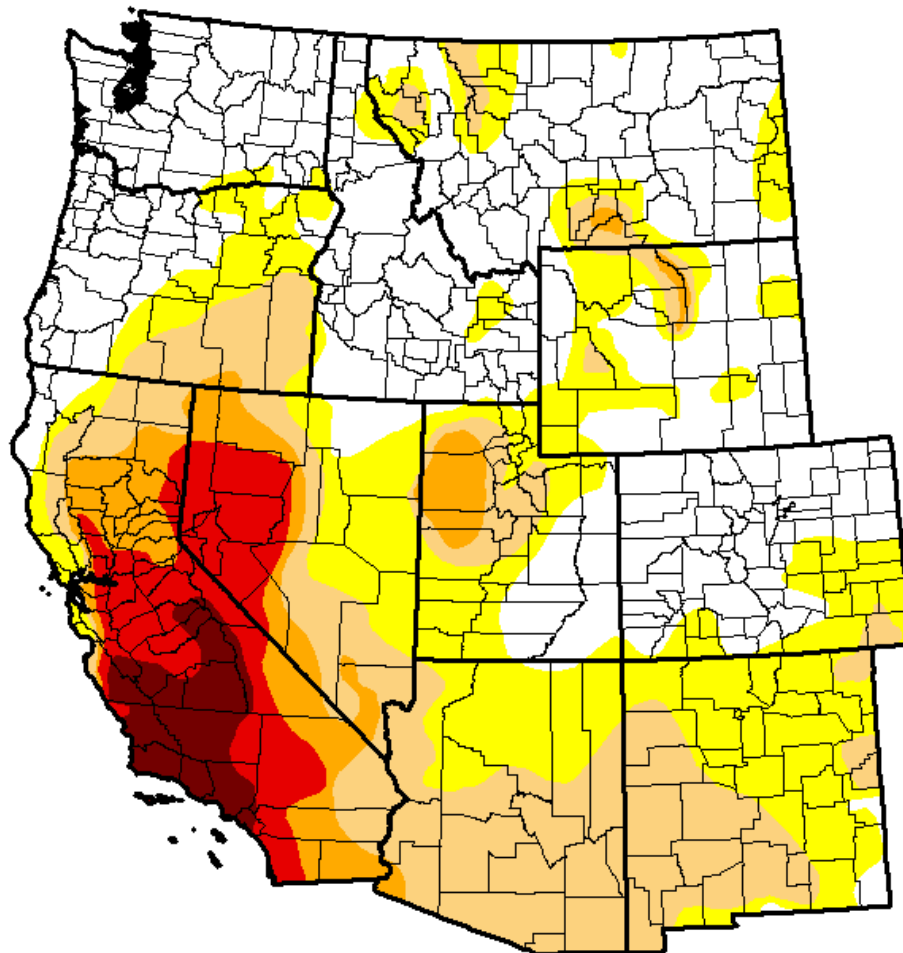


Figure 2-5. 500-Millibar wind field at 4:00 AM Arizona time on April 25, 2016. (NOAA Daily Weather Map).

U.S. Drought Monitor West

April 19, 2016
(Released Thursday, Apr. 21, 2016)
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	40.56	59.44	34.76	14.89	8.71	2.81
Last Week 4/12/2016	38.87	61.13	35.75	15.15	9.53	4.33
3 Months Ago 1/19/2016	37.36	62.64	40.19	21.59	12.26	6.14
Start of Calendar Year 12/29/2015	33.17	66.83	45.07	29.30	15.92	6.85
Start of Water Year 9/29/2015	22.77	77.23	57.81	42.42	26.50	7.62
One Year Ago 4/21/2015	28.21	71.79	61.51	37.95	17.19	7.95

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Richard Tinker
CPC/NOAA/NWS/NCEP



<http://droughtmonitor.unl.edu/>

Figure 2-6. Western states drought monitor as of April 19, 2016.

Table 2-1. 24-Hour Average PM₁₀ Concentrations (µg/m³) at Maricopa County and PM₁₀ Nonattainment Area Monitors on April 18-May 2, 2016.

Monitor	April 18	April 19	April 20	April 21	April 22	April 23	April 24	April 25	April 26	April 27	April 28	April 29	April 30	May 1	May 2
Apache Junction	10	15	19	19	22	26	24	76	90	27	40	31	29	19	20
Buckeye	29	32	39	54	50	39	31	105	56	39	52	36	38	21	29
Central Phoenix	17	24	36	31	32	29	23	95	64	39	45	35	27	24	29
Durango Complex	22	20	30	31	31	21	20	73	47	33	30	23	18	16	29
Dysart	12	26	27	28	26	35	17	96	63	33	56	30	24	16	16
Glendale	8	14	18	18	18	19	12	64	49	25	35	24	16	15	12
Greenwood	27	36	39	41	45	32	25	105	62	43	46	32	37	25	31
JLG Supersite	14	27	27	26	25	26	20	85	58	30	46	29	25	24	20
Mesa	7	12	22	19	22	16	15	44	58	25	29	19	17	13	15
North Phoenix	6	14	19	19	17	16	12	50	43	22	31	20	15	14	21
South Phoenix	13	18	27	28	27	28	24	70	54	30	32	27	23	22	27
South Scottsdale	14	20	27	29	25	33	21	66	63	27	38	28	25	20	28
Tempe	15	13	22	19	18	18	15	50	48	20	31	19	18	14	18
West 43rd Avenue	34	45	49	58	48	34	30	174	65	48	55	37	32	24	31
West Chandler	11	17	25	26	28	20	20	76	73	31	46	30	30	23	24
West Phoenix	12	23	25	27	25	21	18	71	50	26	35	24	22	18	18
Zuni Hills	12	20	21	21	22	33	17	109	59	30	47	27	19	15	15

Monitoring Data Notes: While not included in this demonstration, one PM₁₀ monitor in the Gila River Indian Community (04-013-7003) also exceeded the 24-hour PM₁₀ standard on April 25, 2016 as a result of the high wind dust event. This monitor is located upwind of the exceeding West 43rd Avenue monitor.

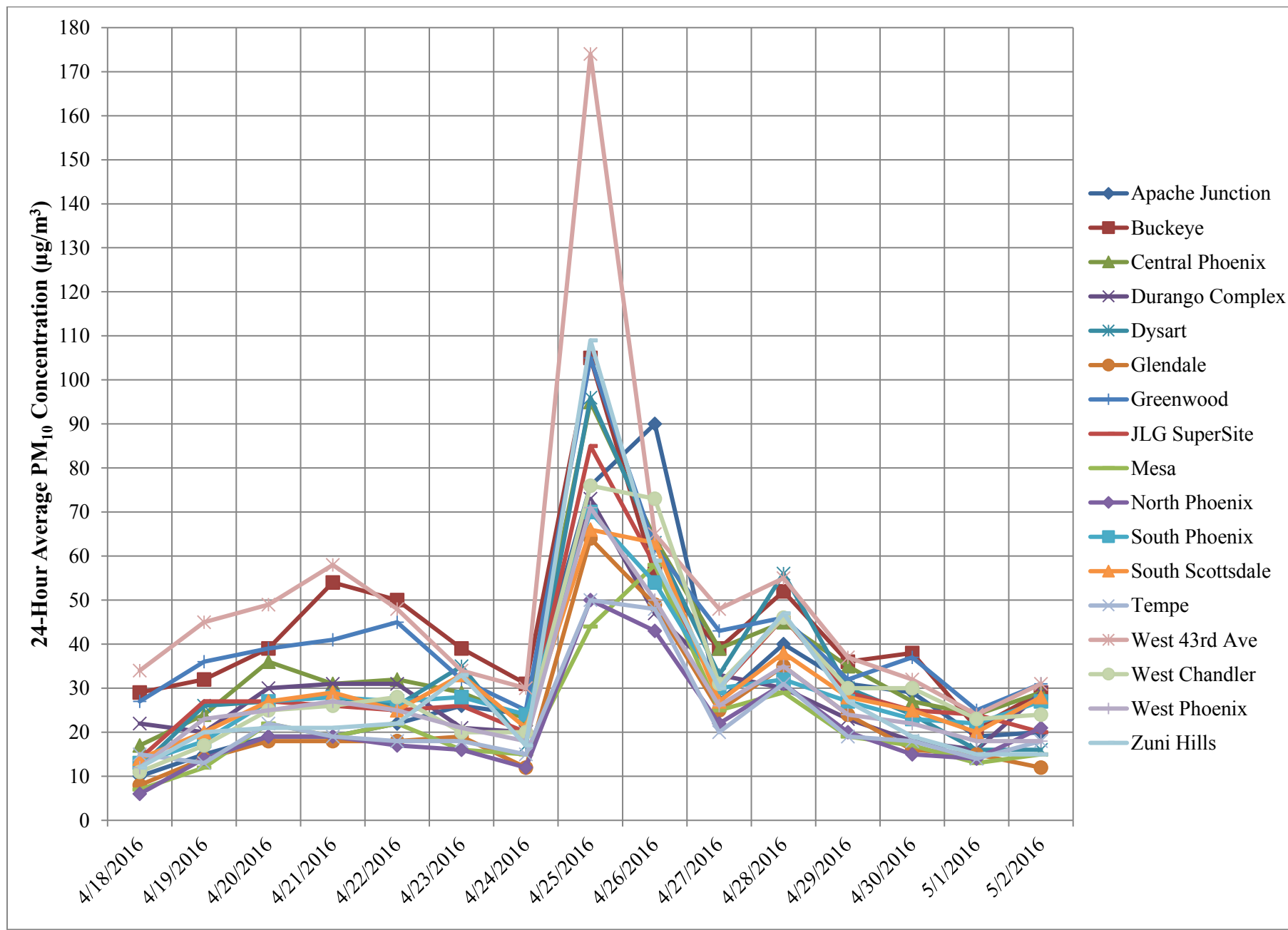


Figure 2-7. 24-hour average PM₁₀ concentrations (µg/m³) at Maricopa County and nonattainment area monitors on April 18-May 2, 2016.

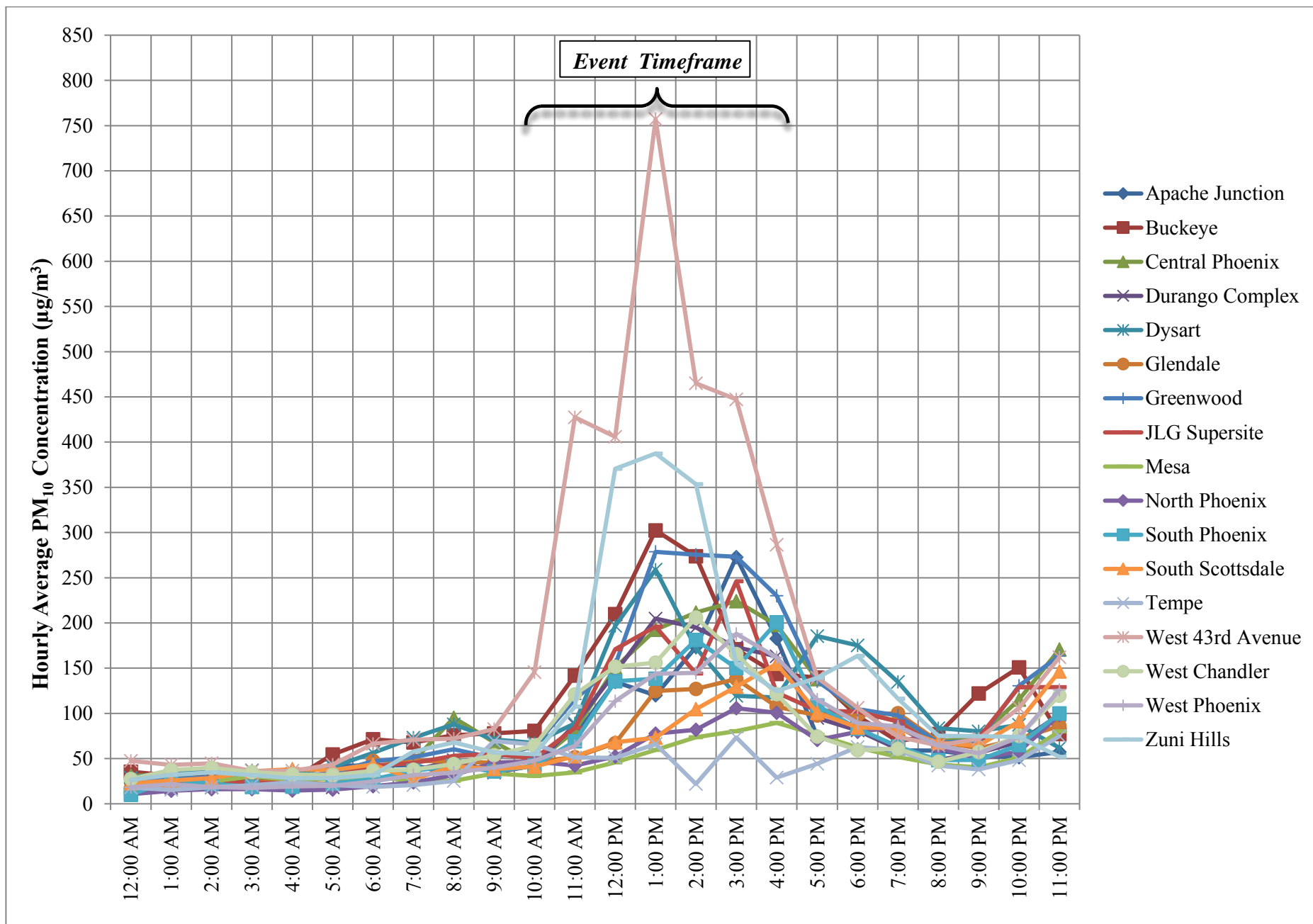


Figure 2-8. Diurnal profile of monitors on April 25, 2016.

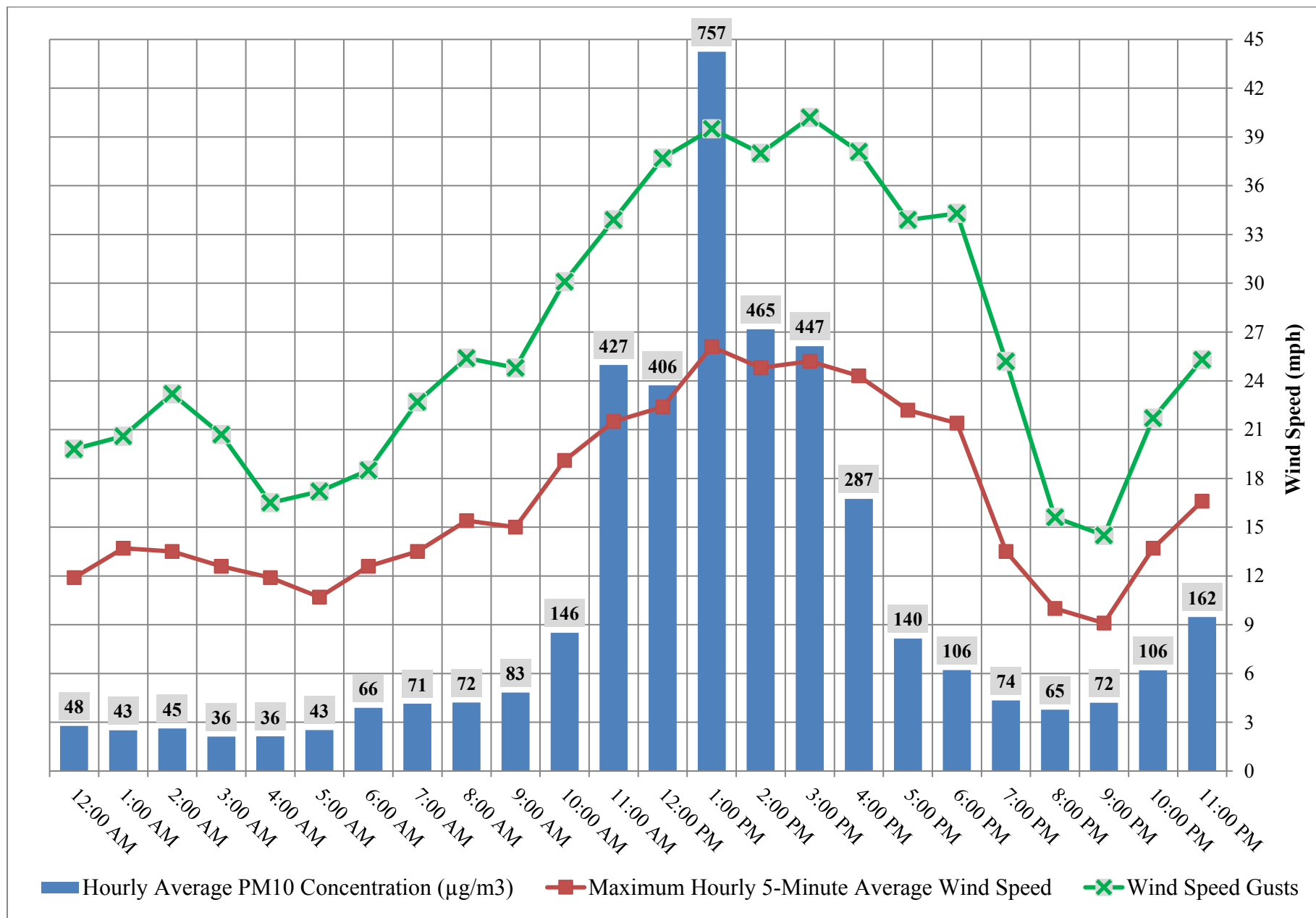


Figure 2-9. Hourly average PM₁₀ concentrations, maximum hourly 5-minute average wind speeds, and maximum hourly gusts as recorded at the exceeding West 43rd Avenue monitor.

III. CLEAR CAUSAL RELATIONSHIP

Introduction

One of the core statutory elements that must be addressed to exclude a monitored exceedance or violation caused by an exceptional event is a demonstration that the exceptional event “affected air quality in such a way that there exists a clear causal relationship between the event and the monitored exceedance or violation.” The requirement to include this demonstration is codified in 40 CFR Section 50.14(c)(3)(iv)(B). To support the clear causal relationship requirements in 40 CFR Section 50.14(c)(3)(iv)(B), analyses comparing the claimed event-influenced concentration to concentrations at the same monitoring site at other times are required as stated in 40 CFR Section 50.14(c)(3)(iv)(C).

Additionally, specific to high wind dust events, the preamble to the revised exceptional events rule states that “EPA expects air agencies to provide relevant wind data...showing how the observed sustained wind speed compares to the established high wind threshold and demonstrates a relationship between the sustained wind speeds and measured PM concentrations at a particular monitoring location”. Demonstrations covering all of the required elements of a clear causal relationship are presented in the sections below.

Comparison of High Wind Dust Event Concentrations with Historical Concentrations

In Table 2 of the preamble to the revised exceptional events rule, EPA includes as guidance seven categories of “historical concentration evidence” that should be addressed in order to meet the requirement in 40 CFR Section 50.14(c)(3)(iv)(C) to provide analyses comparing the claimed event-influenced concentration to concentrations at the same monitoring site at other times. The seven categories listed by EPA and where they are addressed in this documentation are listed below:

1. Compare the concentrations on the claimed event day with past historical data (included in Figure 3–1).
2. Demonstrate spatial and/or temporal variability of the pollutant of interest in the area (included in Figures 3–3 through 3–28 and Figure 2-7).
3. Determine percentile ranking: 99th percentile (based upon five years of data, April 25, 2011 – April 25, 2016).
4. Plot annual time series to show the range of “normal” values (included in Figure 3–1).
5. Identify all “high” values in all plots (included in Figure 3–1).
6. Identify historical trends (optional, included in Figure 3–1).
7. Identify diurnal or seasonal patterns (included in Figures 3–1 and 3–2).

The bulk of the seven categories listed above are addressed in Figure 3–1. Figure 3–1 includes all 24-hour average PM₁₀ concentrations at the exceeding West 43rd Ave monitor from January 1, 2011 through September 30, 2016. This period includes the most recent five calendar years of concentration data at the exceeding monitoring site, as recommended by EPA in the preamble to the revised exceptional events rule. Within the time period presented, Figure 3–1 identifies all days that have been flagged as high wind dust events (including the concurrence status of those days by EPA) and all exceedance days.

All exceedances in Figure 3–1, with the exception of one day, have been identified as high wind dust events. Figure 3–1 generally indicates that high wind dust events normally occur in spring through fall (when dry

cold fronts and the summer monsoon season are most active), but may occur at any time. The high wind dust events are relatively rare occurring on 19 days out of 2100, or 0.9% of the time. The specific percentile ranking of this high wind dust event 24-hour average PM₁₀ concentration is in the 99th percentile, based upon five years of data (April 25, 2011 – April 25, 2016).

While not specifically indicated in Figure 3–1, it is important to note that some of the other high, but not exceeding PM₁₀ concentrations (100-150 µg/m³) at the West 43rd Avenue monitor, occurred on days when high wind dust events nearly caused an exceedance, or on days when high wind dust events caused exceedances at other monitors in the Maricopa County PM₁₀ nonattainment area. Because of the vast size of the nonattainment area, it is rare that a high wind dust event will cause all monitors within the nonattainment area to exceed the PM₁₀ standard. As seen in this high wind dust event, PM₁₀ concentrations were elevated across the nonattainment area, particularly at the western nonattainment area monitors (e.g., Buckeye monitor at 105 µg/m³, Zuni Hills monitor at 109 µg/m³), but only the West 43rd Avenue monitor exceeded on April 25, 2016.

Figure 3–1 also includes a linear trend line of the 24-hour average PM₁₀ concentration data at the West 43rd Avenue monitor. This trend line indicates approximately an average 8 µg/m³ decrease from January 1, 2011 to September 30, 2016 (i.e., a decrease from an average of about 48 µg/m³ to an average of about 40 µg/m³). While the trend line represents an average of concentration data that can vary significantly from day to day, the trend line does indicate that overall PM₁₀ concentrations at the West 43rd Avenue monitor have been decreasing with time, despite an increase in population, employment and vehicle traffic throughout the nonattainment area. This suggests that controls within the PM₁₀ nonattainment area continue to be effective at preventing PM₁₀ exceedances except during the uncontrollable meteorological conditions that lead to high wind dust events.

As can be seen in Figure 3–1, there is not a distinct seasonal pattern for PM₁₀, but rather concentrations can vary daily in all seasons. In general terms, wintertime inversion conditions can elevate PM₁₀ on stagnant days in the winter months, and elevated winds particularly during the monsoon season produce the highest overall PM₁₀ concentrations. However, these meteorological conditions are not constant enough to create a definite “season” when PM₁₀ is elevated or suppressed.

Figure 3–2 displays the average diurnal patterns of PM₁₀ as observed over 5 years from January 1, 2011 through December 31, 2015 at the West 43rd Avenue monitor. The figure includes annual hourly average concentrations, average hourly concentrations in April (the month the event occurred), and the diurnal pattern observed on the event day (April 25, 2016). Hourly PM₁₀ concentrations that were flagged in AQS as being the result of an exceptional event have been removed from the annual and April averages. As can be seen in the Figure 3–2, there is little difference between the annual hourly averages and the hourly averages in the month of April over the 5 year period. Diurnal emissions on the high wind dust event day (April 25, 2016) were very similar to the annual and April averages, except during the hours when high winds were present (approximately 9am to 7pm and 10pm to 11 pm), providing evidence that no unusual anthropogenic activity was occurring around the exceeding West 43rd Avenue monitor on the high wind dust event day (i.e., no elevated hourly PM₁₀ concentrations during non-windy conditions on the event day as compared to historical hourly averages).

In addition to the data presented in Figures 3–1 and 3–2, data in Figure 2–7 displays the 24-hour average PM₁₀ concentrations at all nonattainment area monitors a week before and after the high wind dust event on April 25, 2016. The figure indicates that PM₁₀ concentrations were relatively low throughout the nonattainment area both before and after the high wind dust event on April 25, 2016. While the West 43rd Avenue monitor experienced the highest increase in PM₁₀ concentrations, nearly all monitors spiked at a similar time in response to the arrival of the high wind dust event.

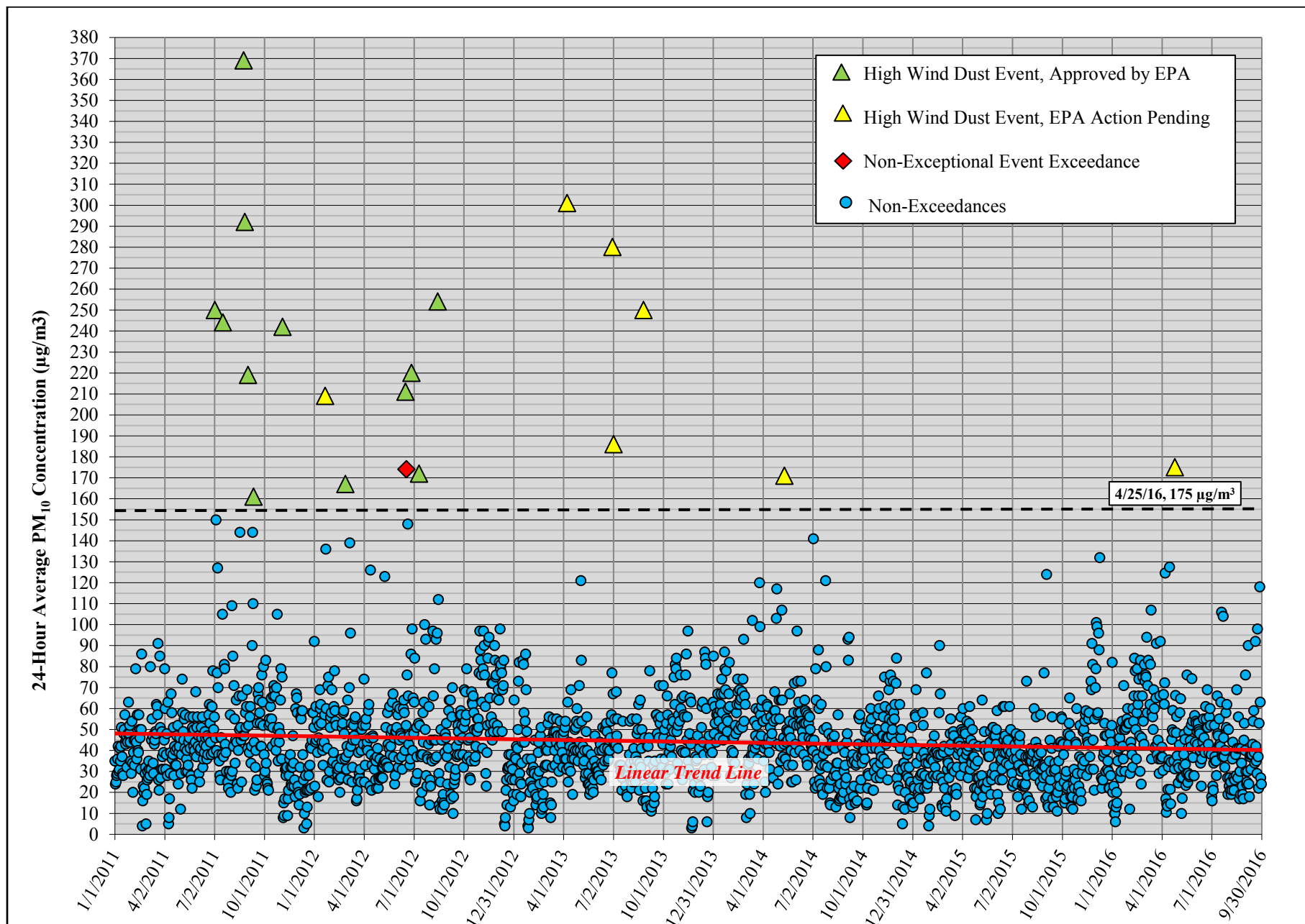


Figure 3-1. Plot of 24-hour average PM₁₀ concentrations at the West 43rd Avenue monitor, January 2011 – September 2016.

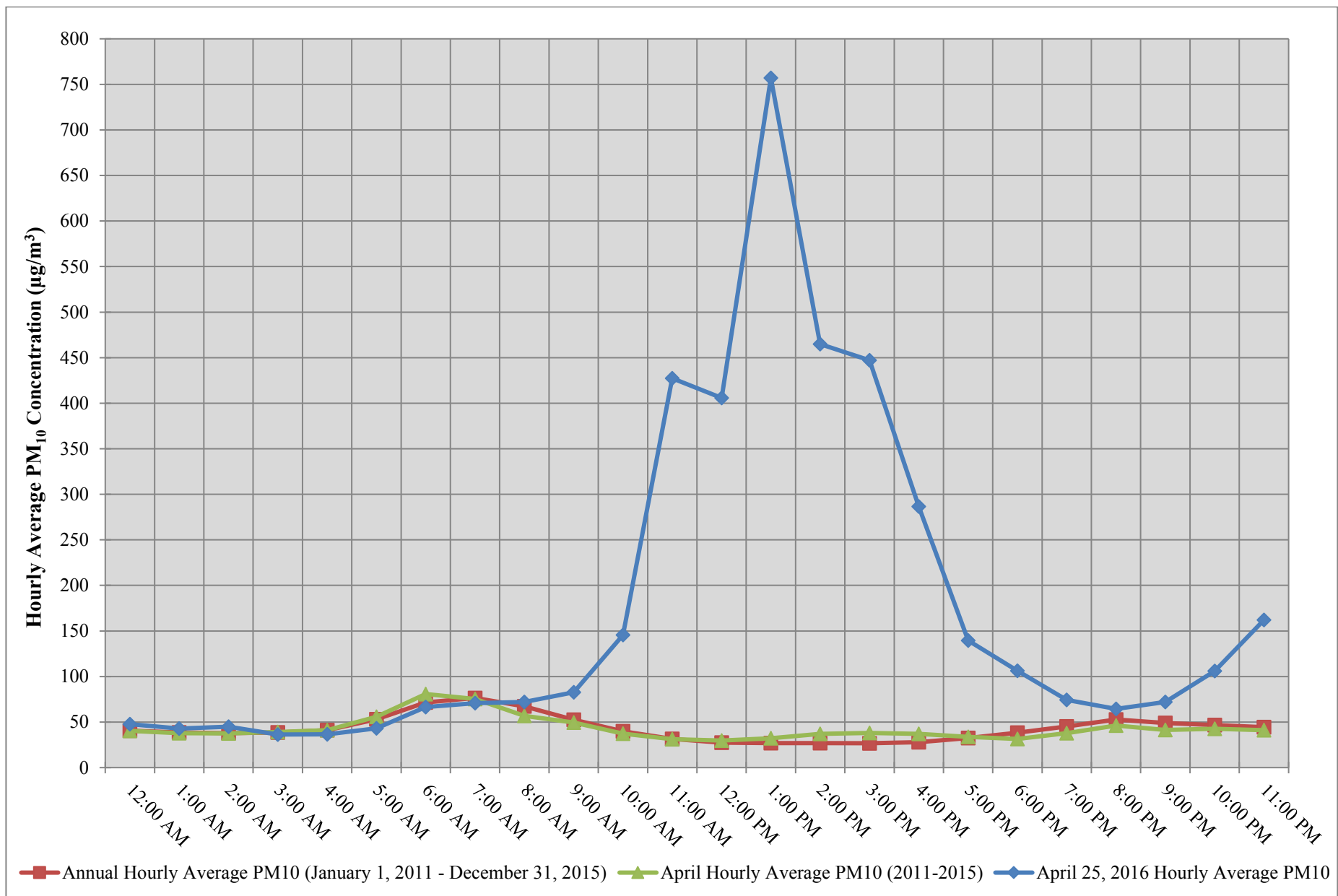


Figure 3-2. Plot of annual hourly average PM₁₀ concentrations (1/1/2011 – 12/31/2015), hourly average PM₁₀ concentrations in April (2011 – 2015), and diurnal PM₁₀ concentrations at the West 43rd Avenue monitor on the April 25, 2016 high wind dust event day.

Chronological and Spatial Presentation of Wind, Visibility, and PM₁₀ Concentration Data During the High Wind Dust Event in the Maricopa County PM₁₀ Nonattainment Area

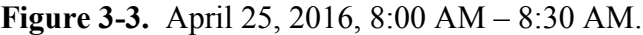
In addition to the analyses focused on comparison of the high wind dust event PM₁₀ concentration to historical concentrations, Figure 3–3 through 3–27 display the chronological and spatial distribution of wind, visibility and PM₁₀ concentration data throughout the nonattainment area in mapped form. The figures establish a clear causal relationship between elevated PM₁₀ concentrations, elevated wind speeds and reduced visibility in the nonattainment area. The figures also establish the transport of PM₁₀ across the nonattainment area with the passing of the cold front winds.

PM₁₀ concentrations in the figures were highest at the exceeding West 43rd Avenue monitor when wind speeds were also at their highest. In 40 CFR Section 50.14(b)(5)(iii), EPA establishes a default high wind threshold of a sustained wind of 25 mph, as the wind speed necessary to entrain significant amounts of dust from undisturbed, natural areas, as well as disturbed, anthropogenic source areas that are subject to reasonable controls. Sustained winds, as represented in the figures, were above 25 mph at multiple locations throughout the nonattainment and at the exceeding West 43rd Avenue monitor, indicating that reasonable controls on anthropogenic sources of windblown dust were overwhelmed and that emissions of dust from natural desert areas would be expected. In summary, the figures make it clear that without the high wind dust event caused by the passing cold front, there would have been no exceedance at the West 43rd Avenue monitor.

The data displayed in the following figures were gathered from five data sources. All available meteorological and air quality data were used in order to present the most complete story of the event. Table 3–1 displays the types of data used from each agency in creating the maps. Each map in the figures represents the chronological and spatial distribution of wind, visibility and PM₁₀ concentration in a 30-minute period. The figures start with the 8:00-8:30 AM period and end with the 8:00-8:30 PM period, covering the arrival and passing of the cold front across the Maricopa County PM₁₀ nonattainment area.

Table 3-1. Data Sets Used in the Creation of Chronological and Spatial Maps.

Agency	Data Sets
Arizona Department of Environmental Quality (ADEQ)	Hourly PM ₁₀ Concentrations, Wind Speed, Wind Direction and Wind Gusts
Arizona Meteorological Network (AZMET)	Hourly Wind Speed, Wind Direction and Wind Gusts
Maricopa County Air Quality Department (MCAQD)	5-Minute PM ₁₀ Concentrations, 5-Minute Wind Speed and Wind Direction, and Maximum Hourly Wind Gusts
Pinal County Air Quality Control District (PCAQCD)	5-Minute and Hourly PM ₁₀ Concentrations, 5-Minute and Hourly Wind Speed, Wind Direction and Wind Gusts
National Weather Service (NWS)	Point in Time Wind Speed, Wind Direction, Wind Gusts, and Visibility



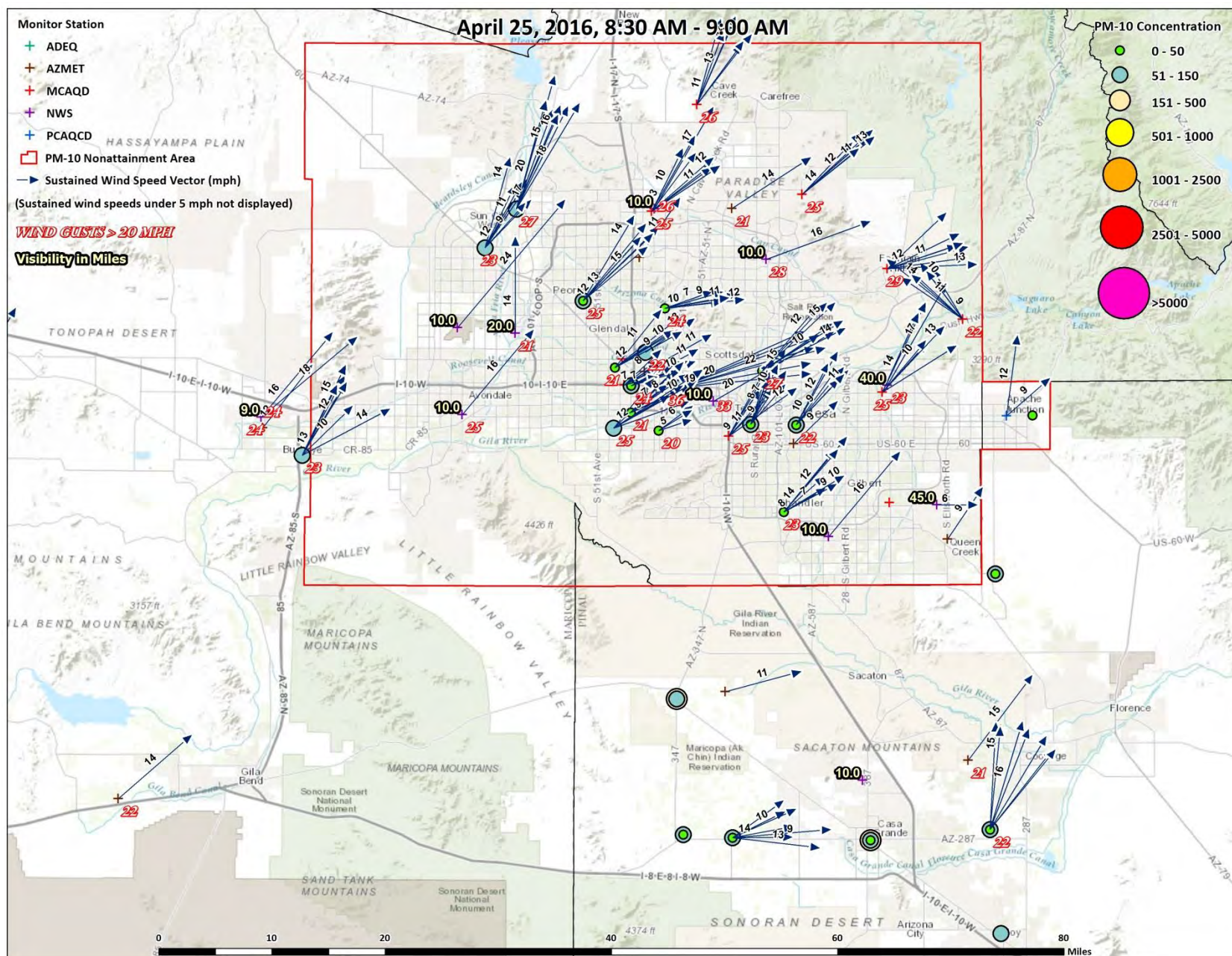


Figure 3-4. April 25, 2016, 8:30 AM – 9:00 AM.

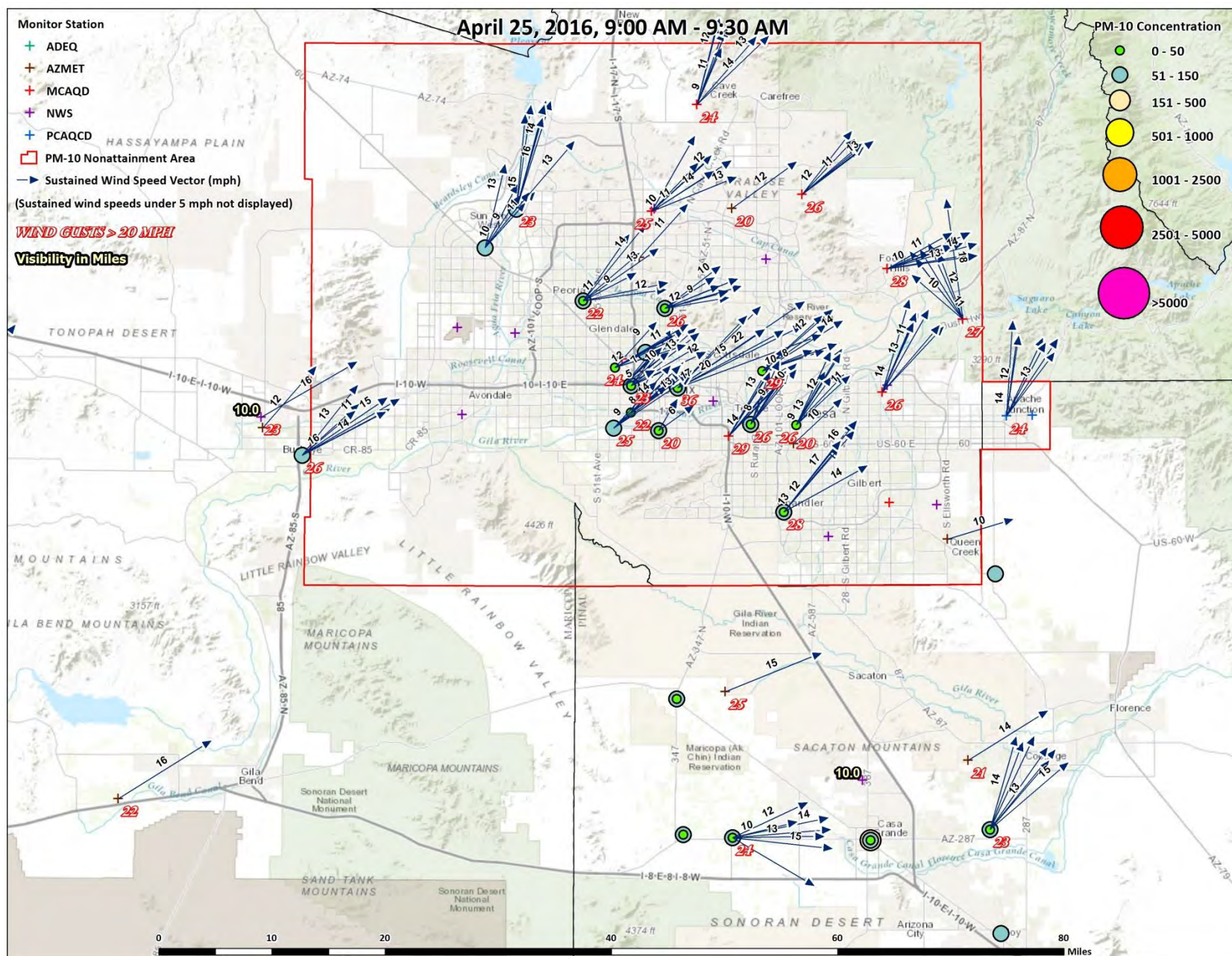


Figure 3-5. April 25, 2016, 9:00 AM – 9:30 AM.

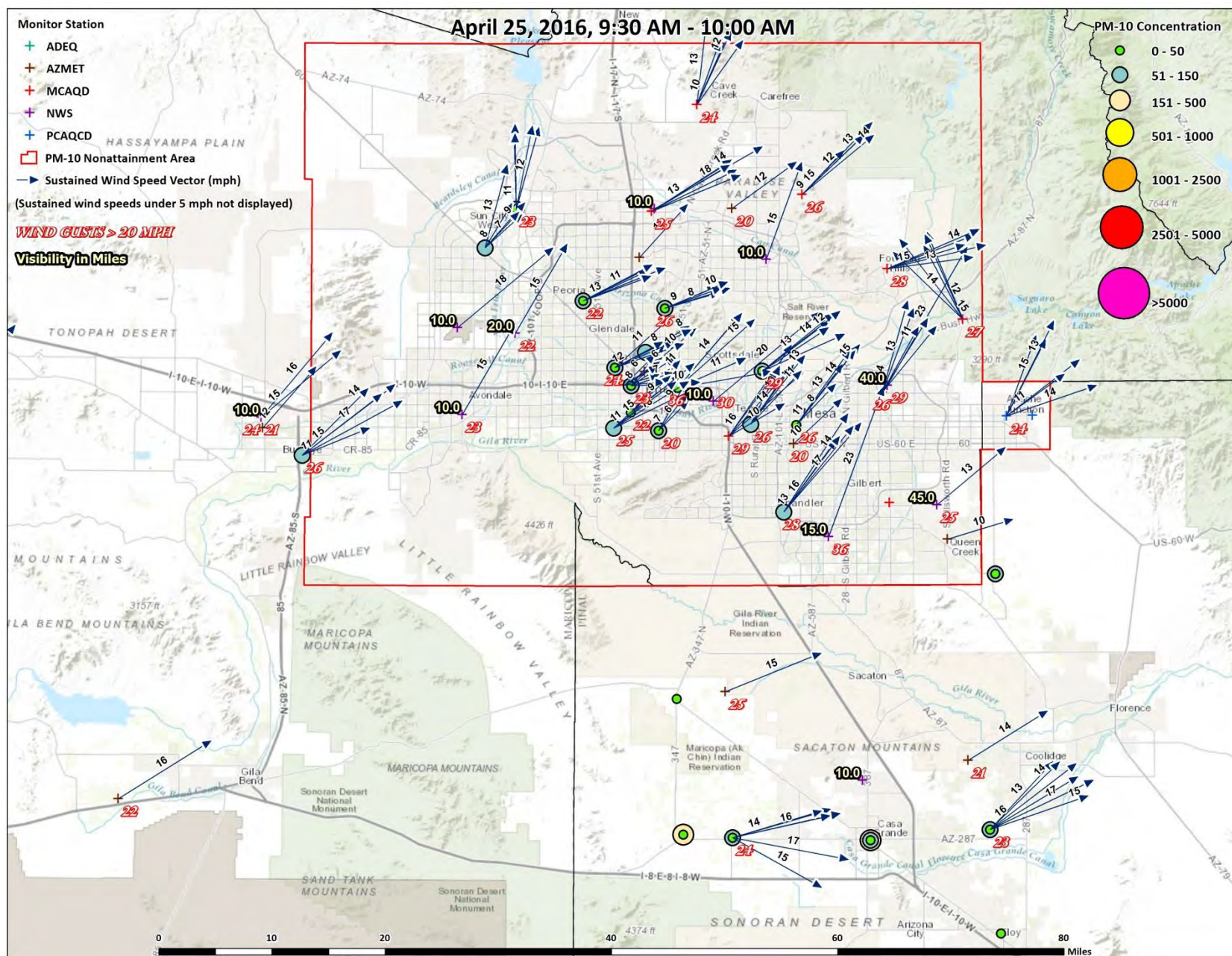


Figure 3-6. April 25, 2016, 9:30 AM – 10:00 AM.

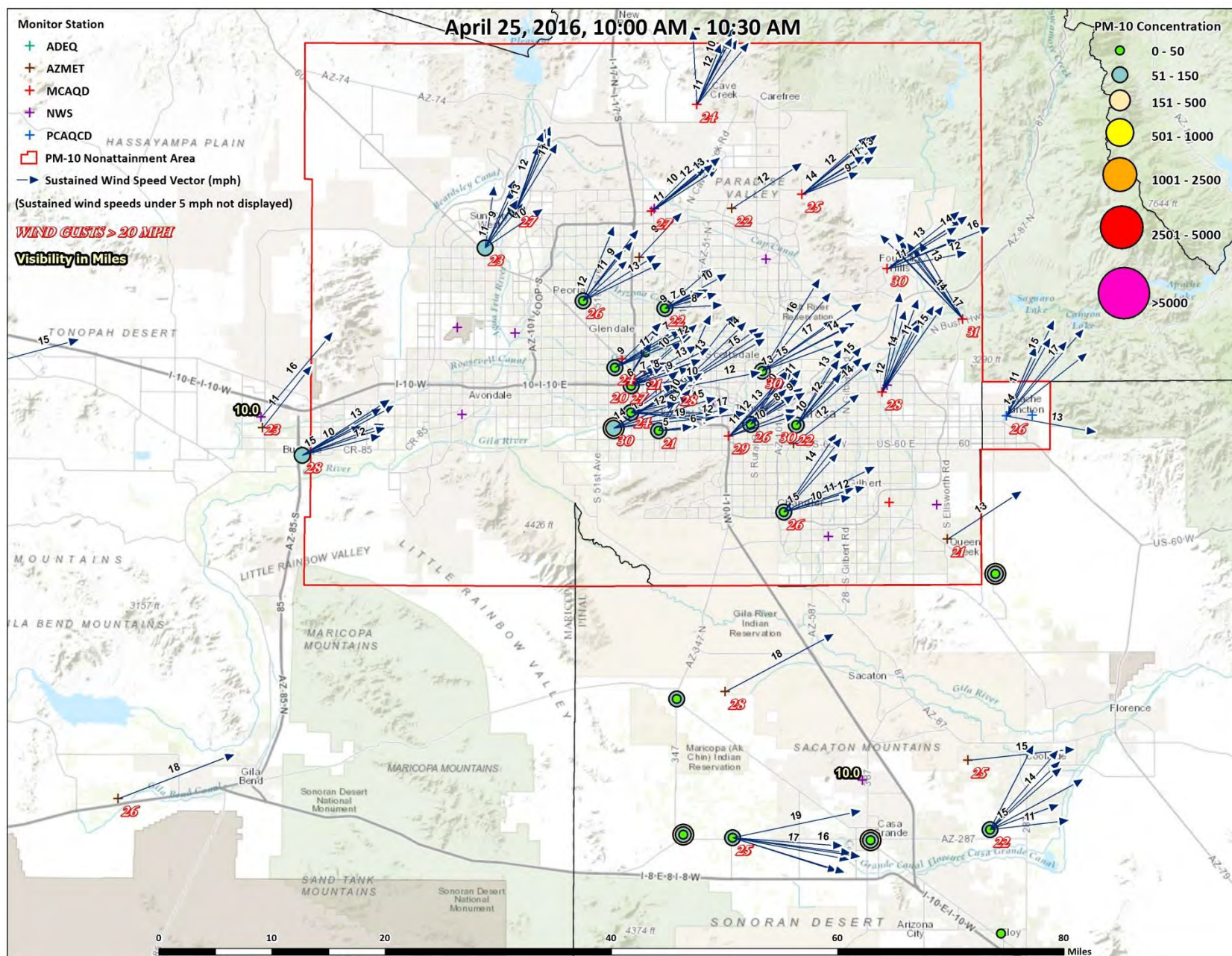


Figure 3-7. April 25, 2016, 10:00 AM – 10:30 AM.

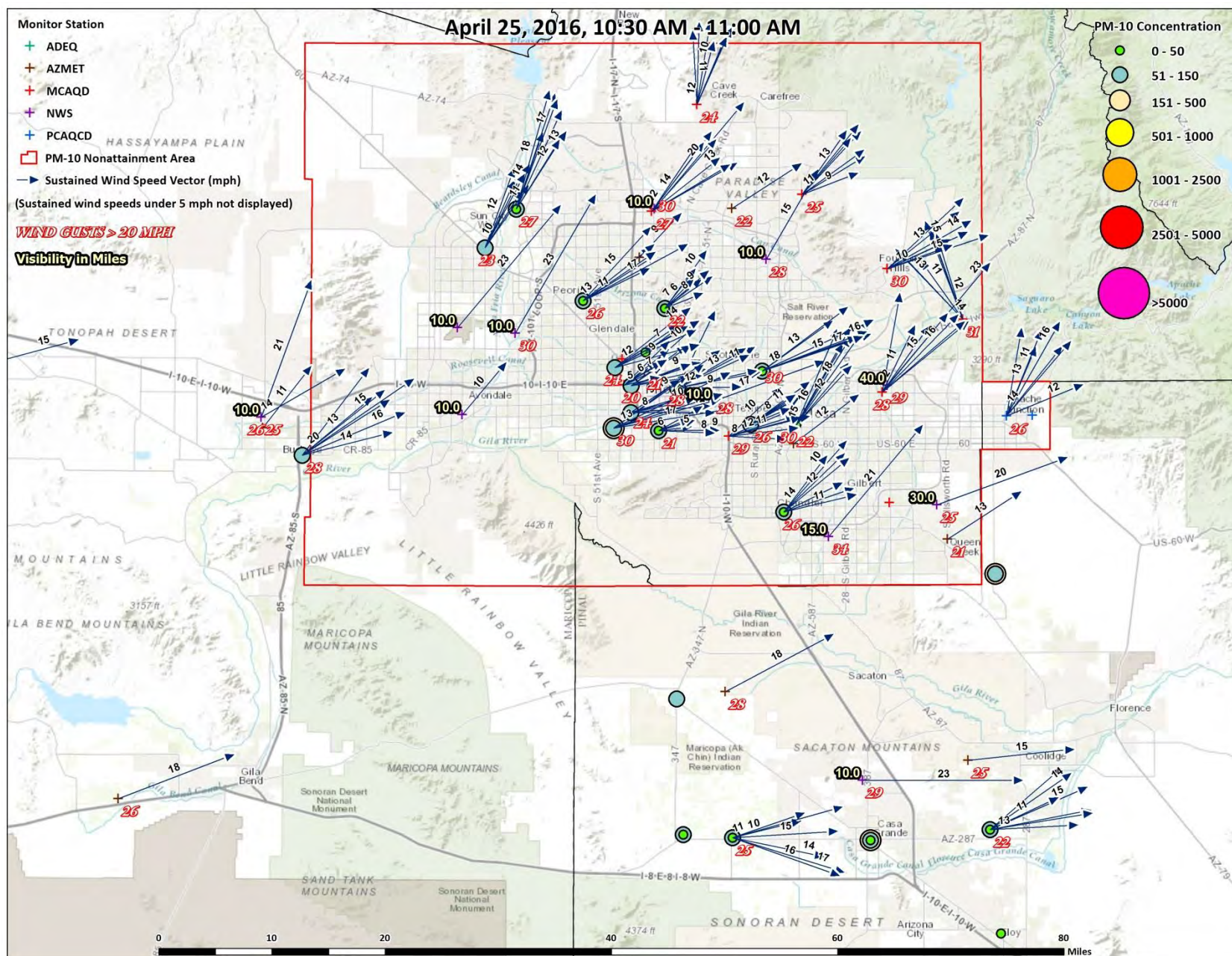
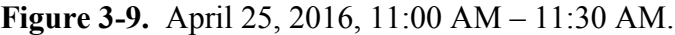


Figure 3-8. April 25, 2016, 10:30 AM – 11:00 AM.



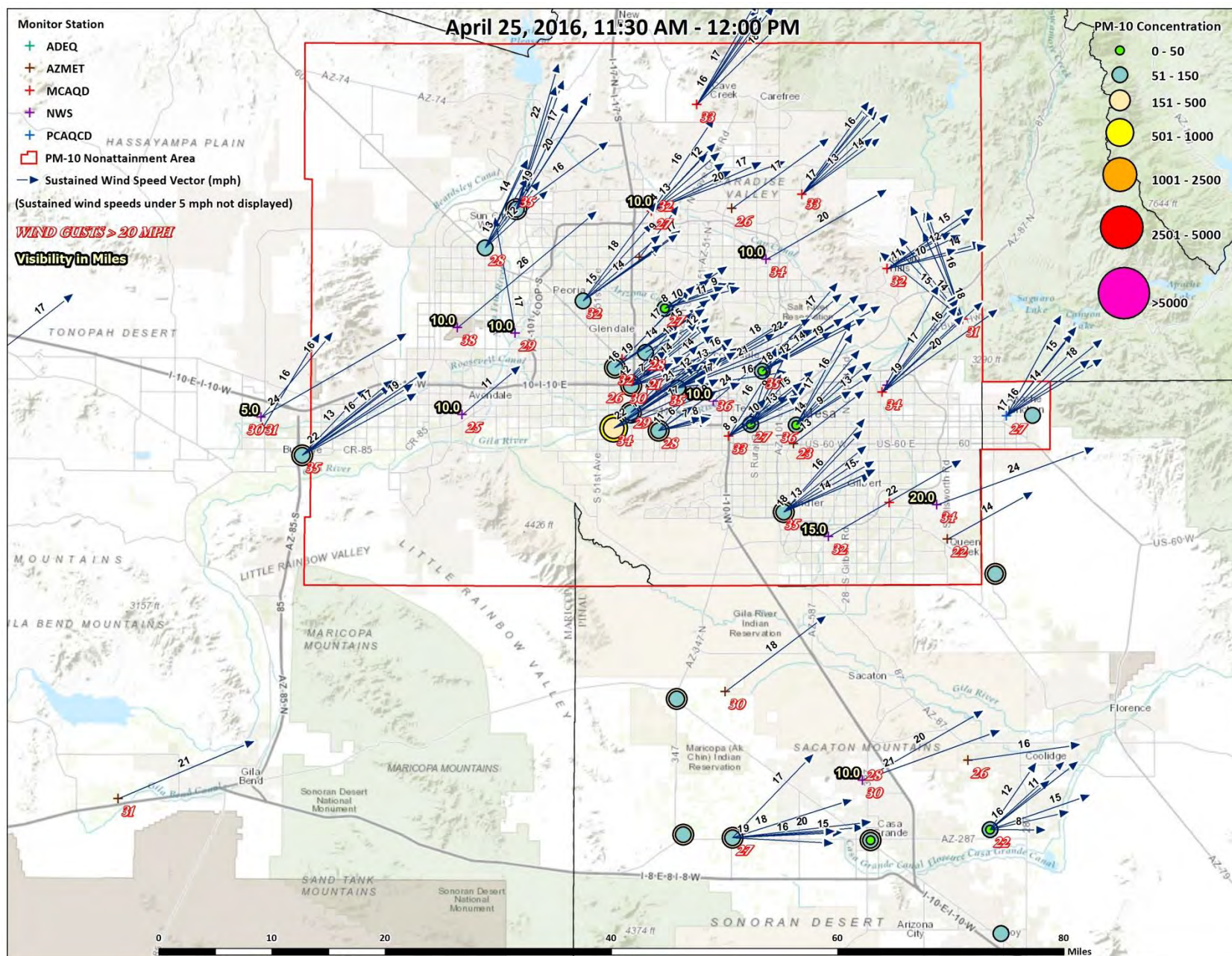


Figure 3-10. April 25, 2016, 11:30 AM – 12:00 PM.

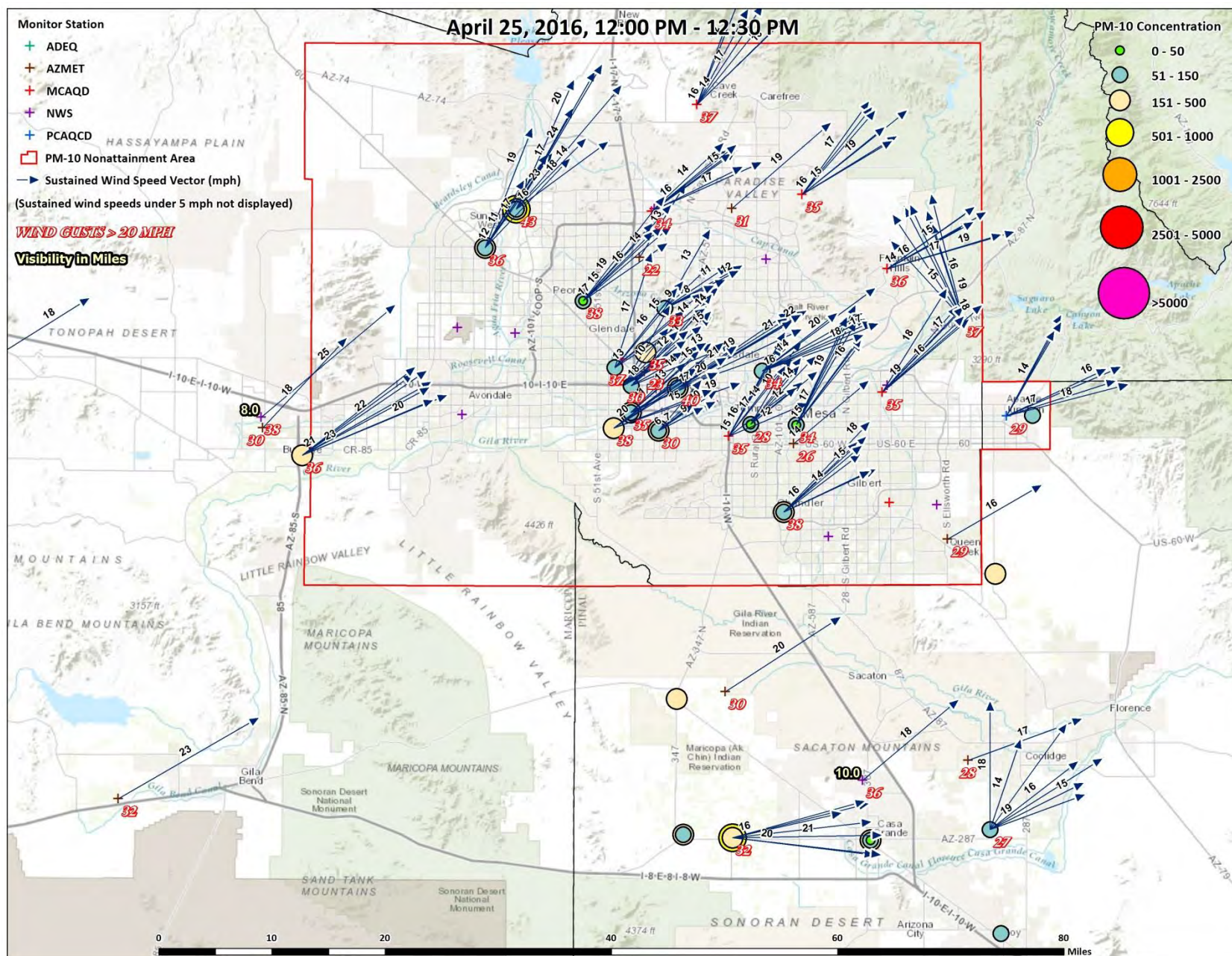


Figure 3-11. April 25, 2016, 12:00 PM – 12:30 PM.

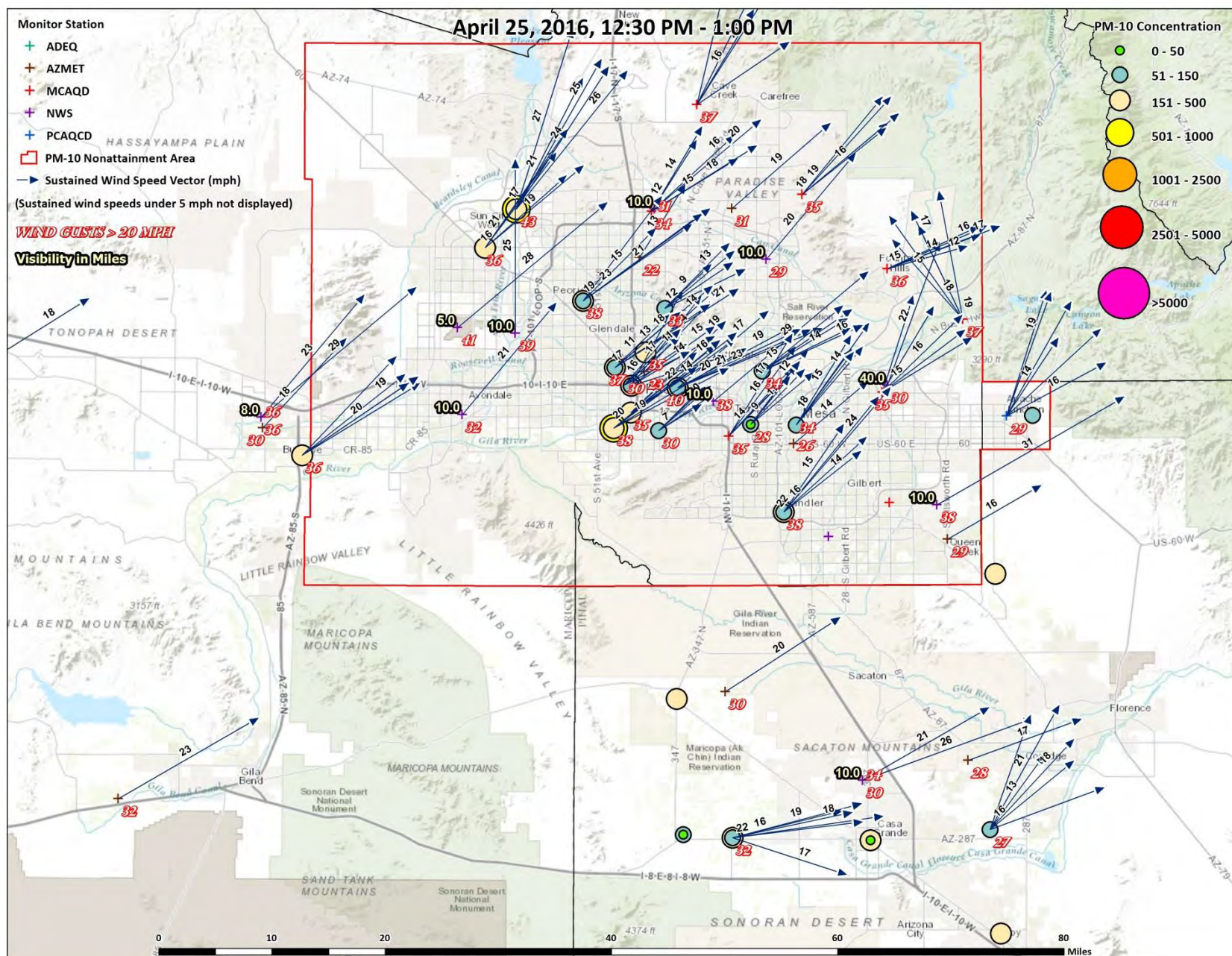


Figure 3-12. April 25, 2016, 12:30 PM – 1:00 PM.

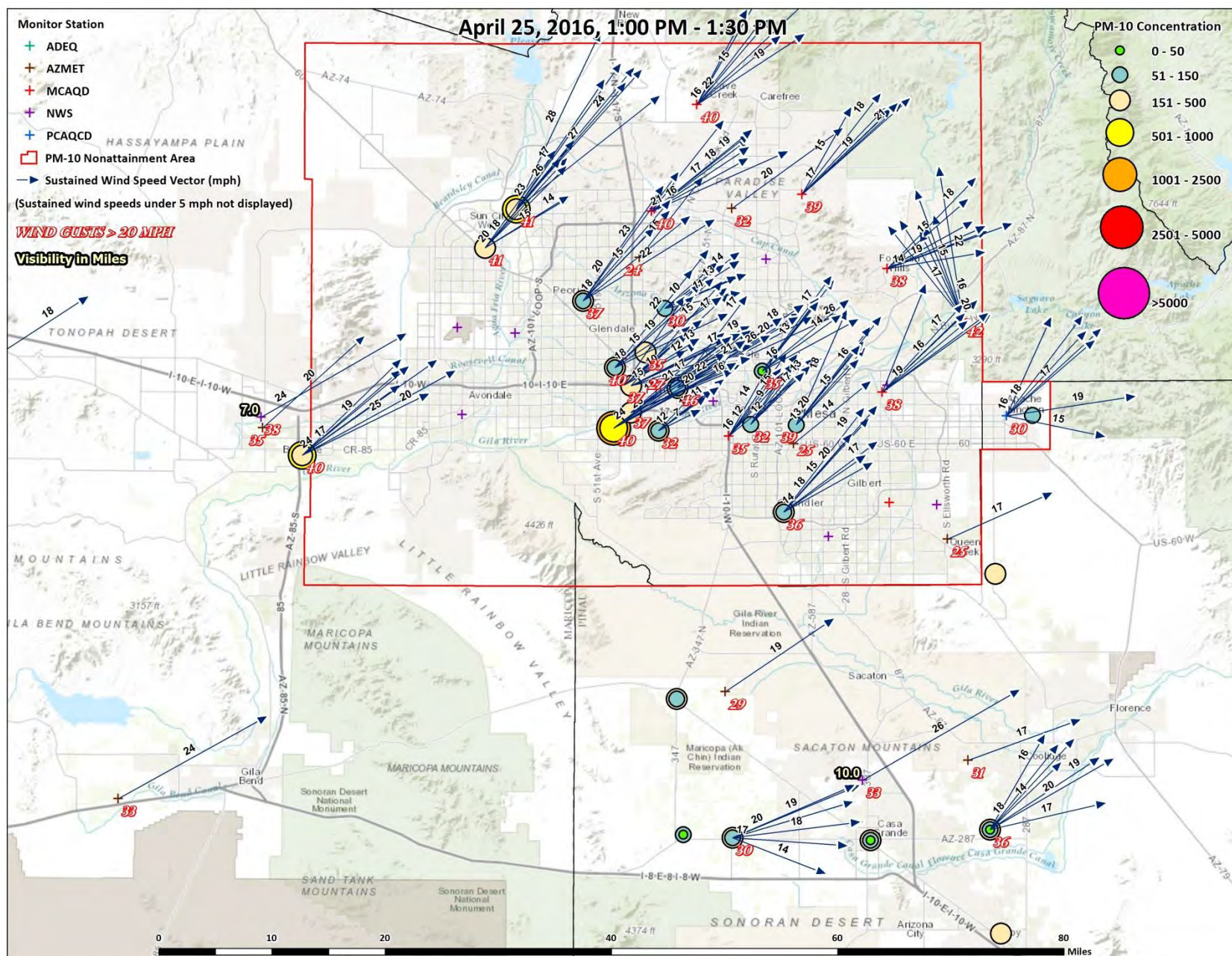


Figure 3-13. April 25, 2016, 1:00 PM – 1:30 PM.

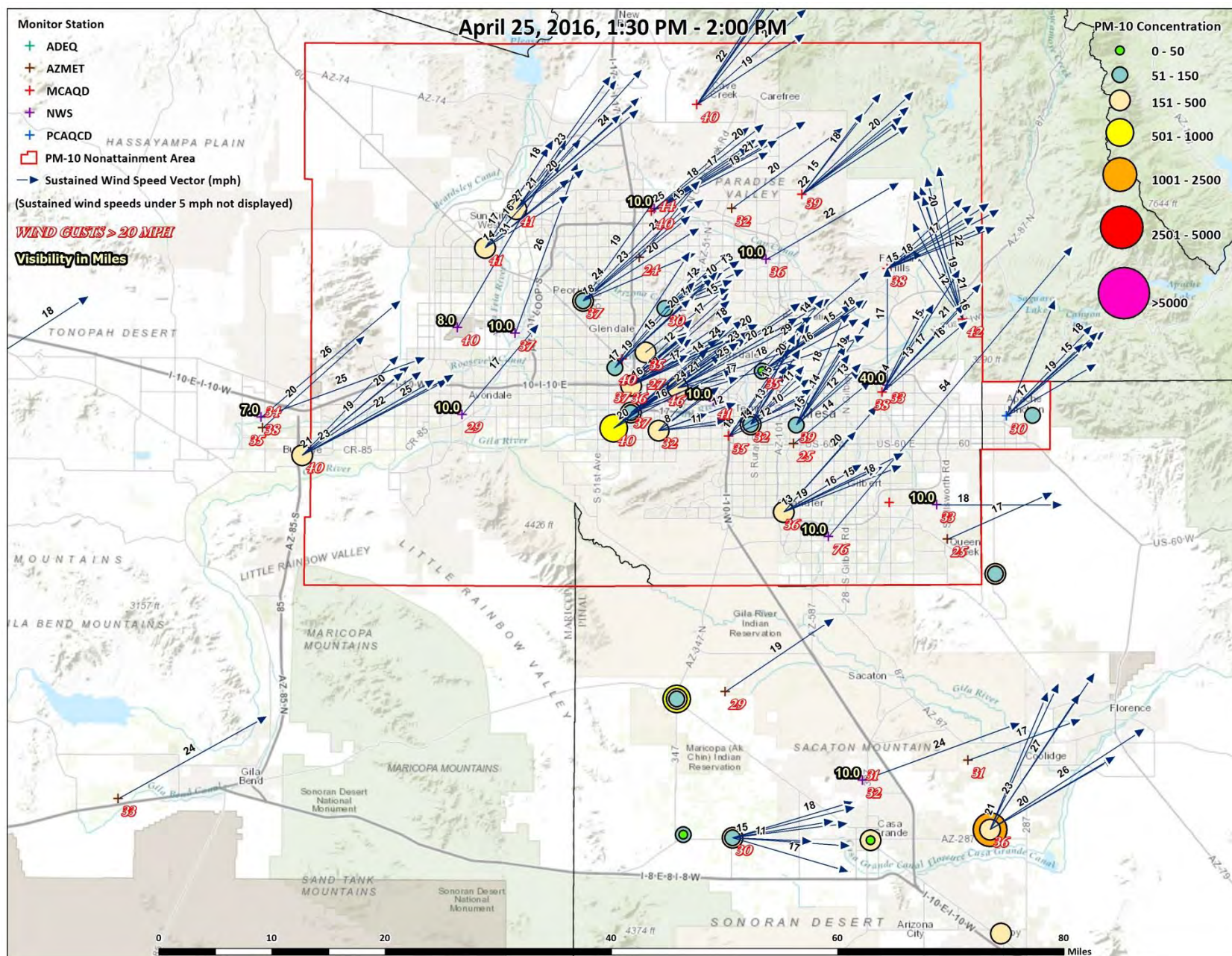


Figure 3-14. April 25, 2016, 1:30 PM – 2:00 PM.

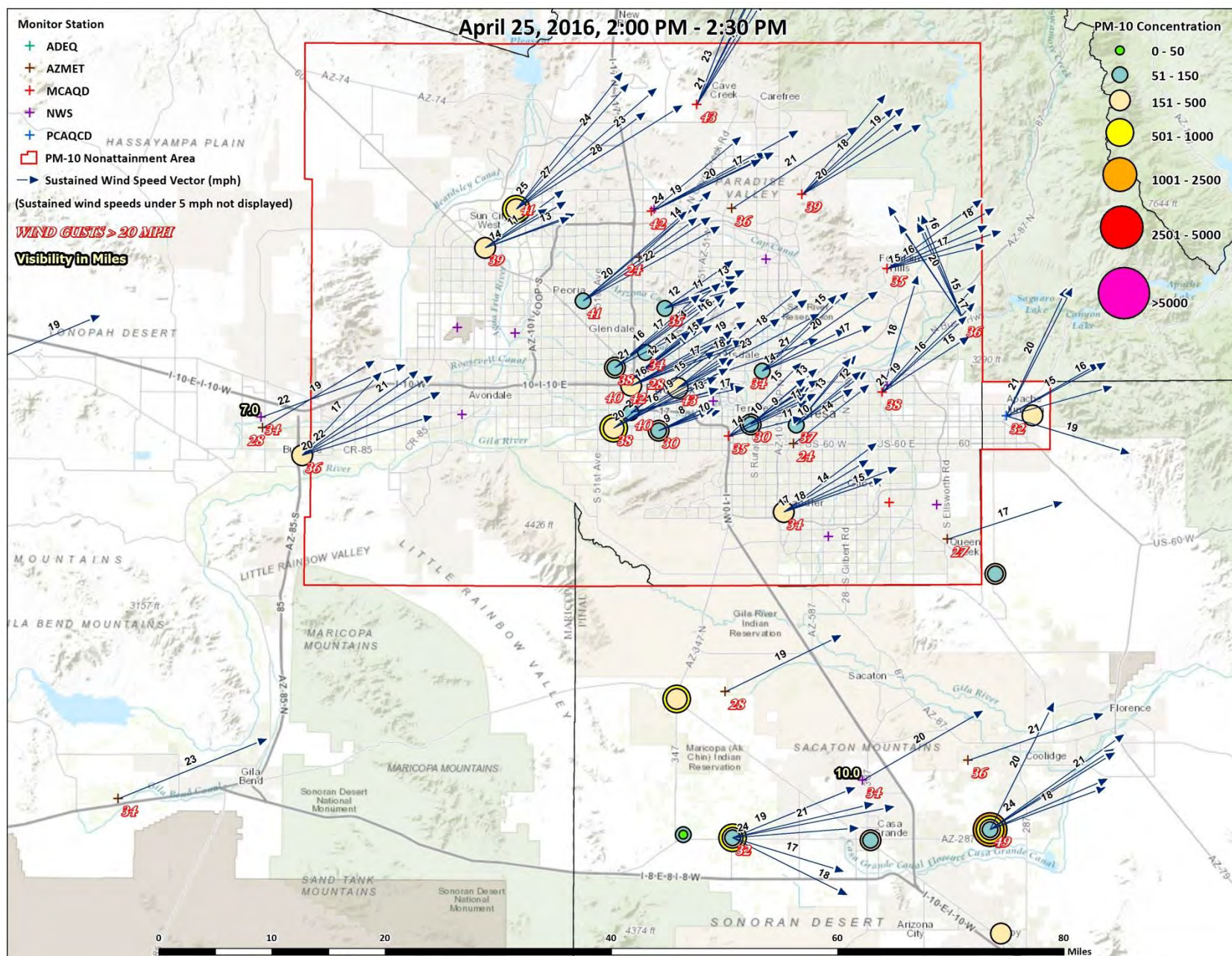


Figure 3-15. April 25, 2016, 2:00 PM – 2:30 PM.

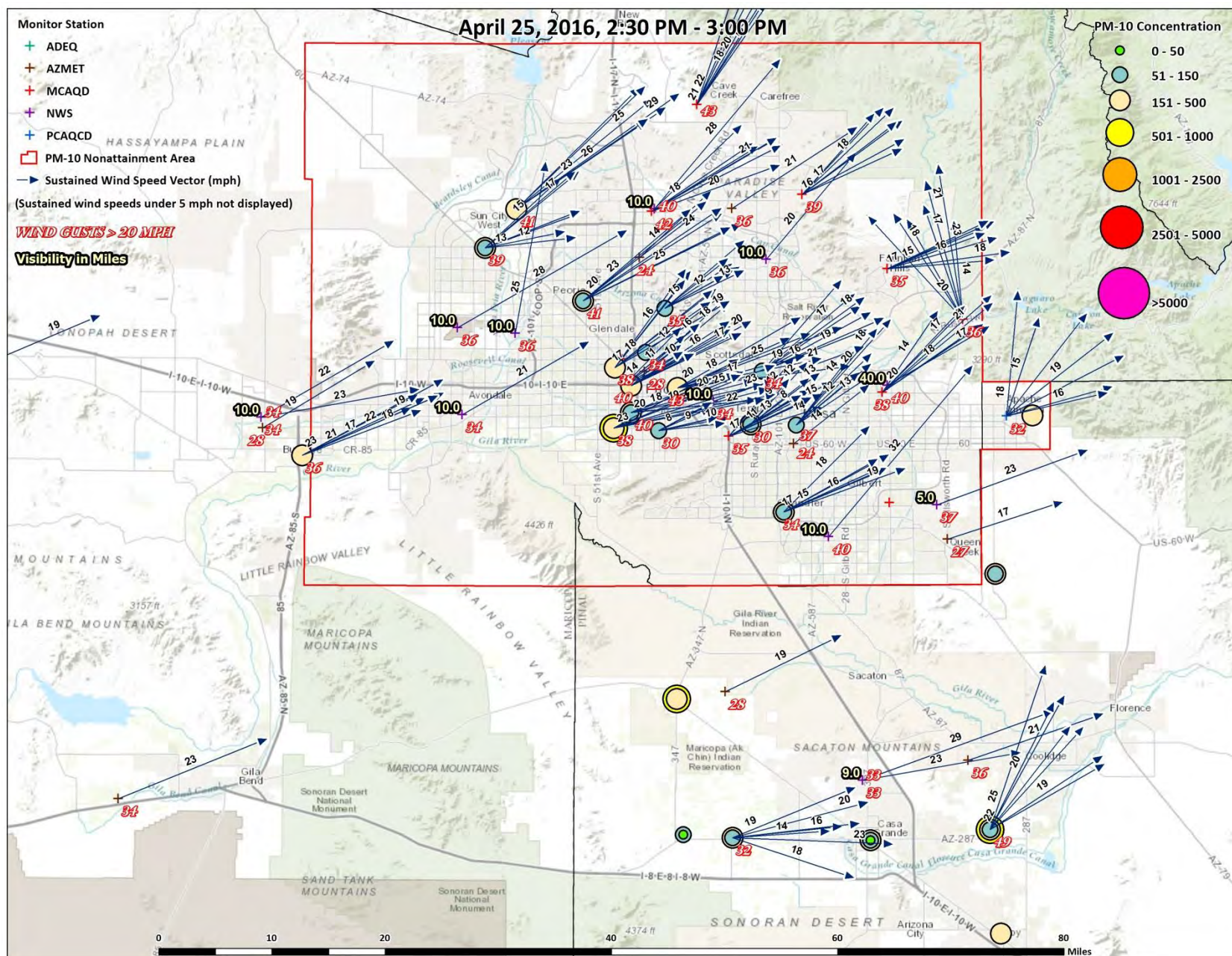


Figure 3-16. April 25, 2016, 2:30 PM – 3:00 PM.

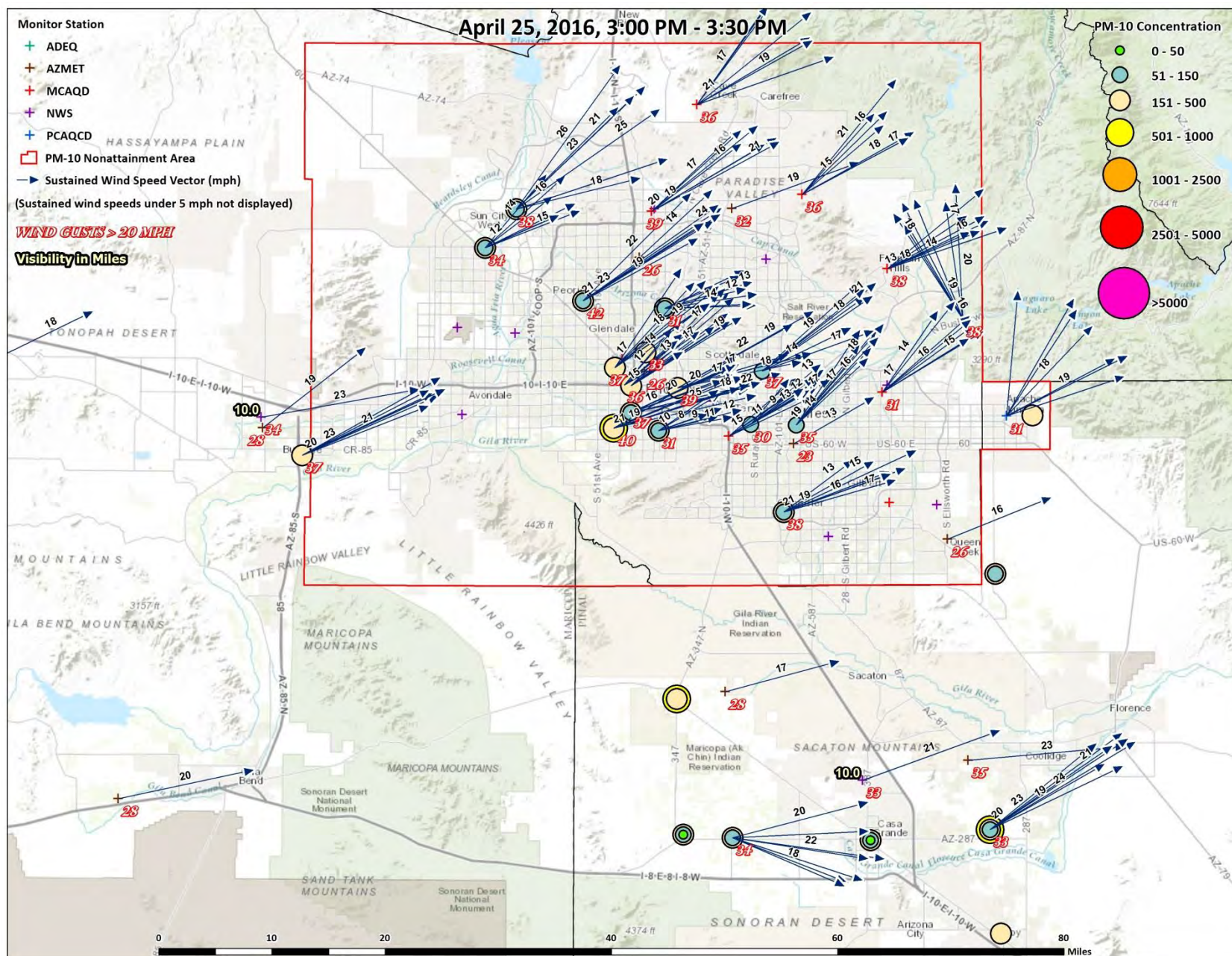


Figure 3-17. April 25, 2016, 3:00 PM – 3:30 PM.



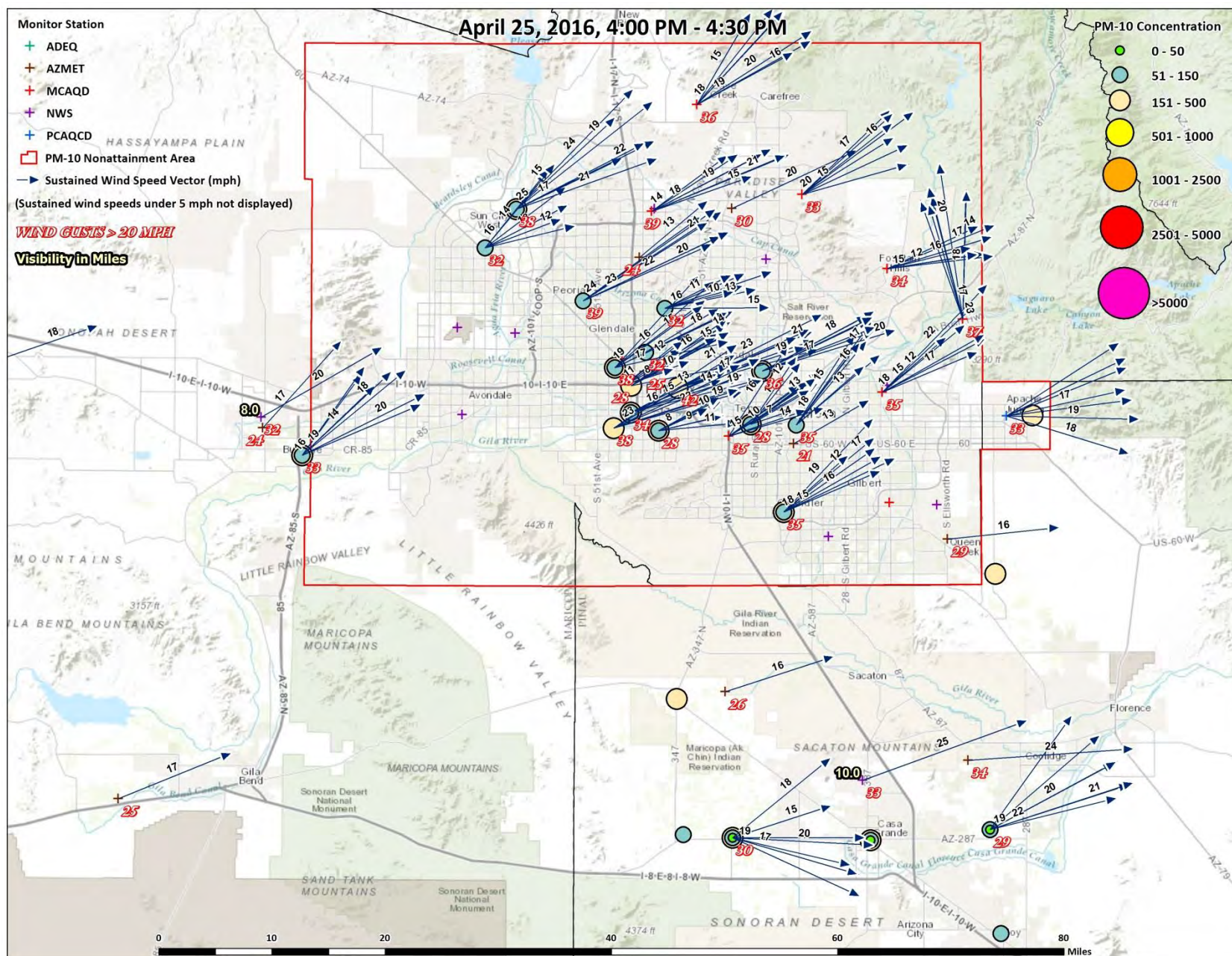


Figure 3-19. April 25, 2016, 4:00 PM – 4:30 PM.

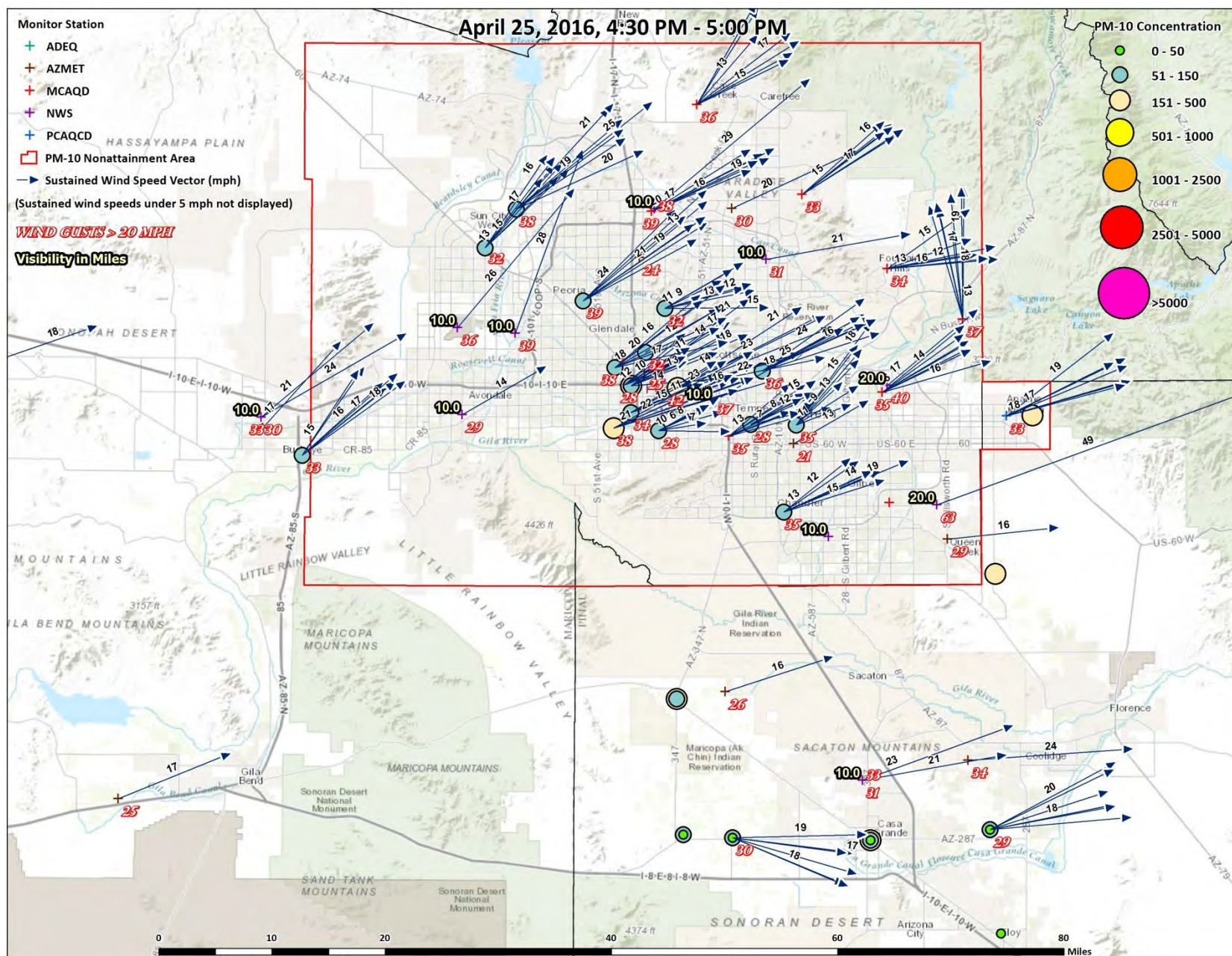


Figure 3-20. April 25, 2016, 4:30 PM – 5:00 PM.



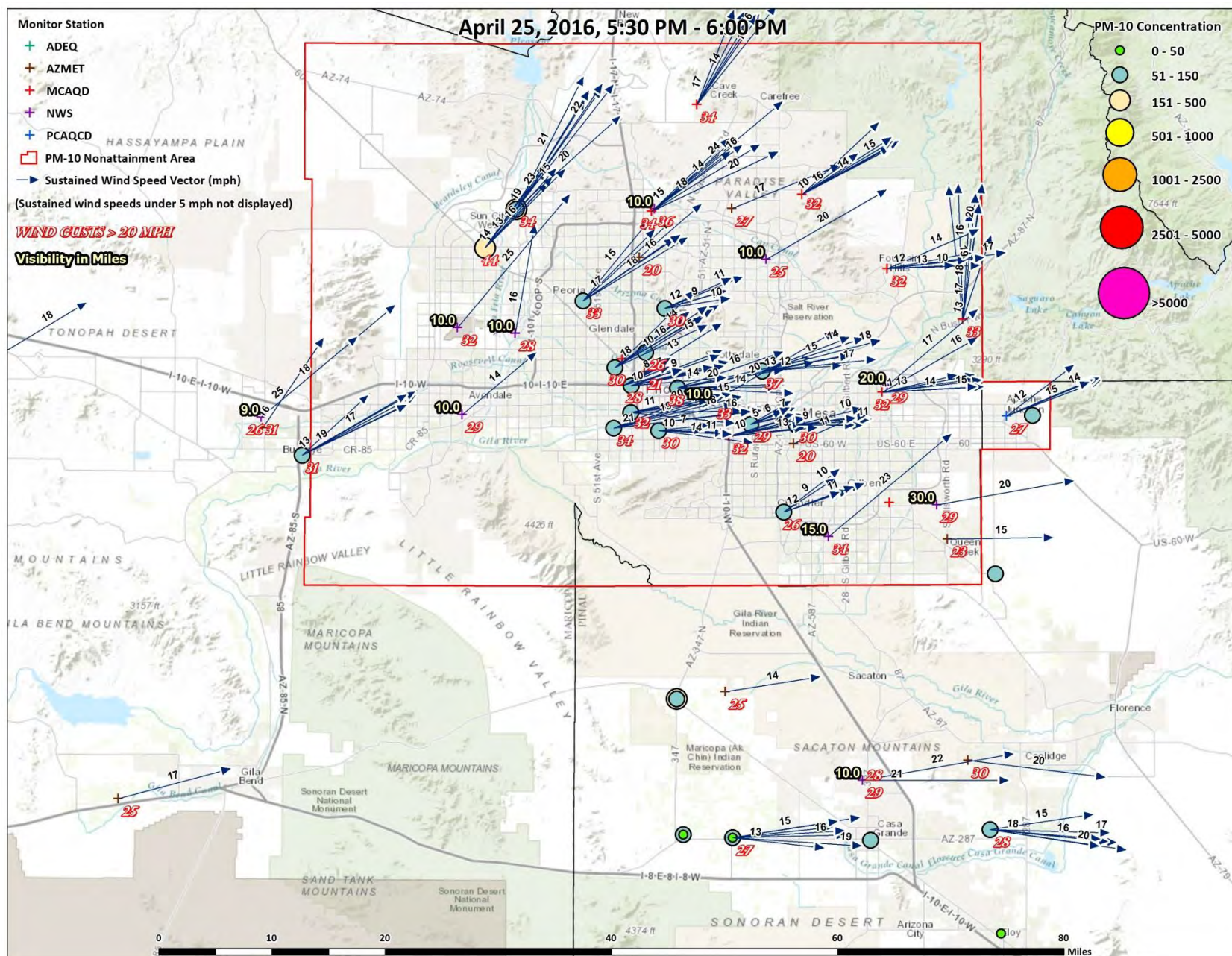
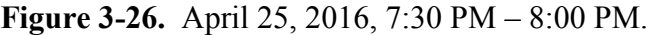


Figure 3-22. April 25, 2016, 5:30 PM – 6:00 PM.









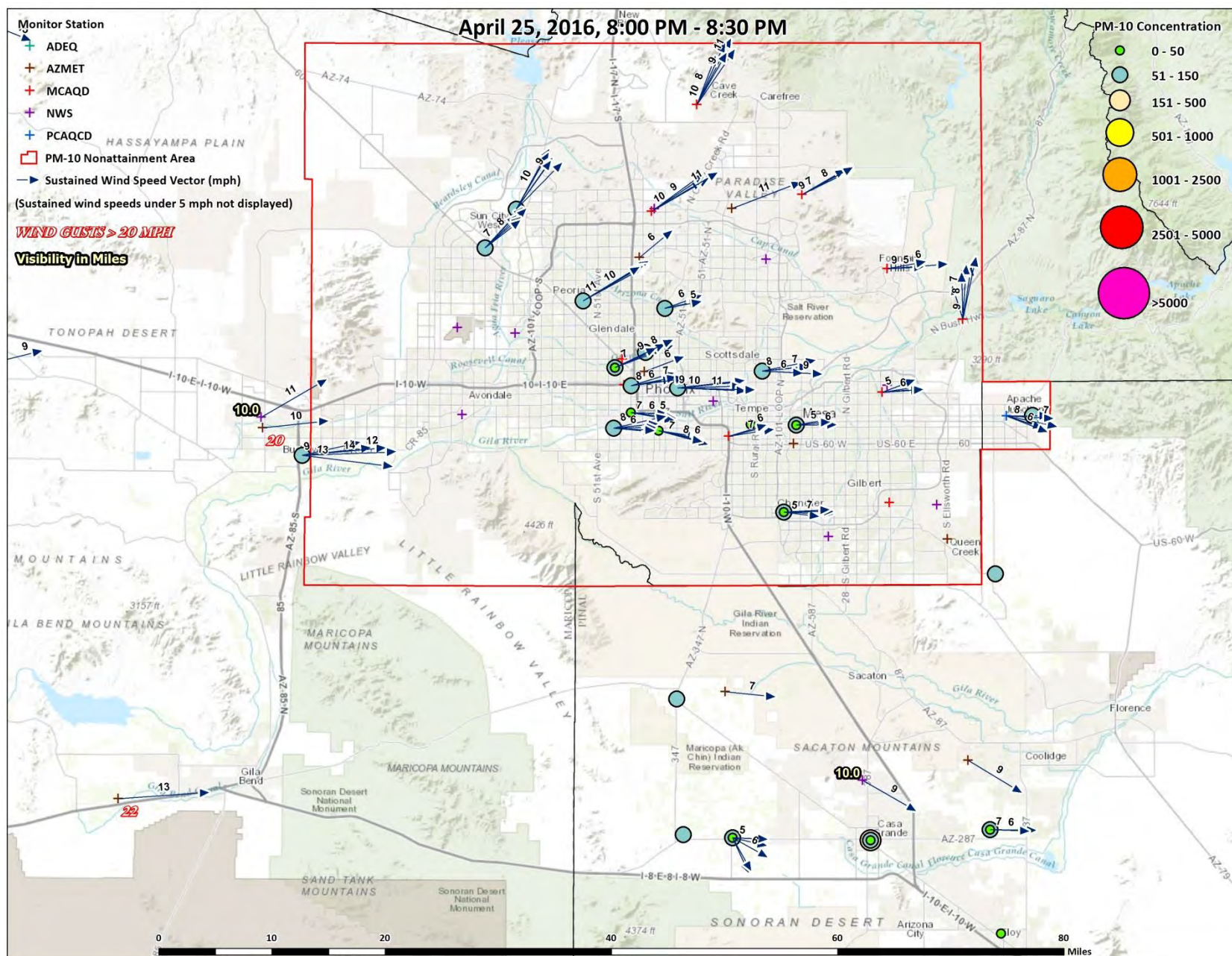


Figure 3-27. April 25, 2016, 8:00 PM – 8:30 PM.

Visibility Photos

Visibility photos taken within the Maricopa County PM₁₀ nonattainment area show the degradation of visibility as windblown dust from the high wind dust event passes through the nonattainment area. These photos provide additional evidence of the clear causal relationship between transported windblown dust from the high wind dust event and the exceedance at the West 43rd Avenue monitor. Figure 3–28 displays visibility conditions on April 25, 2016 before arrival of the high wind dust event (7:15 AM) and during the high wind dust event (3:30PM), respectively.

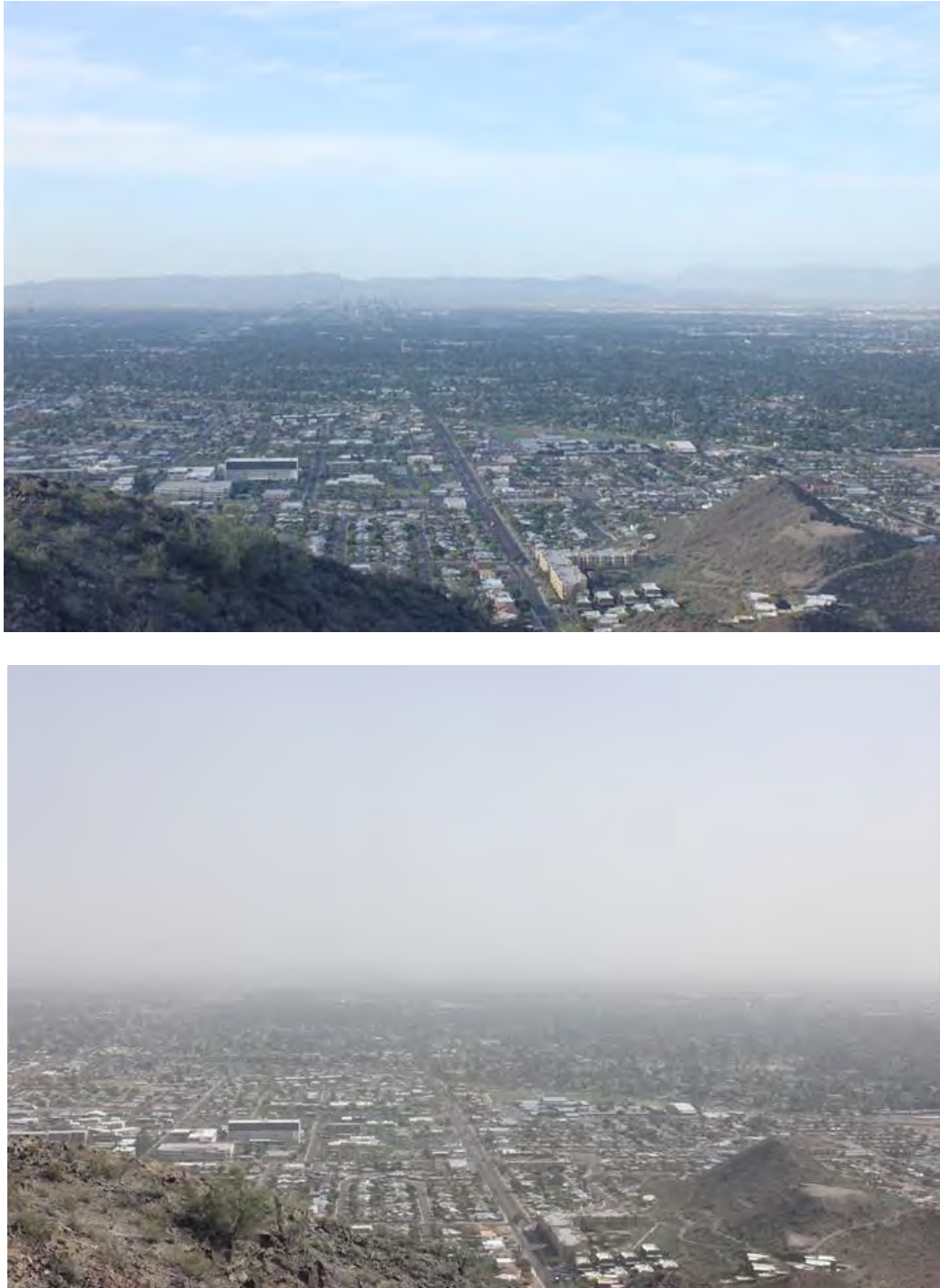


Figure 3-28. Visibility photos on April 25, 2016 at 7:15 AM and 3:30 PM, respectively.

Conclusion

In summary, on April 25, 2016 a high wind dust event passed through the Maricopa County PM₁₀ nonattainment area which generated and transported windblown dust in the form of PM₁₀ resulting in elevated concentrations of PM₁₀ across the nonattainment area and an exceedance of the PM₁₀ standard at the West 43rd Avenue monitor. The monitored PM₁₀ concentrations on April 25, 2016 at the exceeding West 43rd Avenue monitor were compared to historical concentrations at the site in several analyses. The analyses confirm a clear causal relationship between the exceedance and the high wind dust event as compared to historical high wind dust event days, non-event exceedance days, and non-exceedance days.

In addition to the comparison to historical concentrations, figures displaying the chronological and spatial distribution of wind, visibility and PM₁₀ concentration data confirm that (1) sustained winds above 25 mph were high enough to entrain significant windblown dust from natural desert areas and disturbed, anthropogenic source areas subject to reasonable controls; (2) PM₁₀ concentrations peaked when winds speeds peaked; and (3) visibility conditions throughout the nonattainment area were degraded as a result of generated and transported windblown dust from the high wind dust event. These analyses taken as a whole provide strong weight of evidence that the high wind dust event affected air quality in such a way that there exists a clear causal relationship between the high wind dust event on April 25, 2016 and the PM₁₀ exceedance at the West 43rd Avenue monitor on April 25, 2016, thus satisfying the clear causal relationship criterion.

IV. NATURAL EVENT AND NOT REASONABLY CONTROLLABLE OR PREVENTABLE CRITERIA

Natural Event

40 CFR Section 50.14(c)(3)(iv)(E) requires a demonstration that the exceptional event was either a human activity that is unlikely to recur at a particular location or was a natural event. The revised exceptional events rule defines a natural event at 40 CFR Section 50.1(k) as “an event and its resulting emissions, which may recur at the same location, in which human activity plays little or no direct causal role. For purposes of the definition of a natural event, anthropogenic sources that are reasonably controlled shall be considered to not play a direct role in causing emissions.” Additionally, specific to high wind dust events, 40 CFR Section 50.14(b)(5)(ii) states that “[t]he Administrator will consider high wind dust events to be natural events in cases where windblown dust is entirely from natural undisturbed lands in the area or where all anthropogenic sources are reasonably controlled as determined in accordance with paragraph b(8) of this section.”

The clear causal relationship demonstration in the prior chapter found that high wind dust events can recur at the exceeding West 43rd Avenue monitor. Figure 3–1 indicates that 18 prior high wind dust events have occurred in the past five years at the monitor. The clear causal relationship demonstration also found that the PM₁₀ emissions which caused the exceedance at the West 43rd Avenue monitor were associated with windblown dust generated and transported by sustained wind speeds that exceeded the default high wind threshold of 25 mph established in 40 CFR Section 50.14(b)(5)(iii). EPA states in the preamble to the revised exceptional events rule that, “[f]or high wind dust events, if sustained wind speeds are above the high wind threshold and the anthropogenic emissions sources are reasonably controlled, it is more likely that human activity plays little or no direct role in causing emissions.” The following section of this chapter demonstrates that reasonable controls were in place on all windblown dust anthropogenic sources in the Maricopa County PM₁₀ nonattainment area during the high wind dust event. For these reasons, the high wind dust event on April 25, 2016, qualifies as a natural event.

Not Reasonably Controllable or Preventable

40 CFR Section 50.14(c)(3)(iv)(D) requires a demonstration that the exceptional event was both not reasonably controllable and not reasonably preventable. 40 CFR Section 50.14(b)(8) provides the demonstrations needed to establish that the exceptional event was not reasonably controllable or preventable for all exceptional events. Additionally, specific requirements regarding the not reasonably controllable or preventable criterion related to high wind dust events are provided in 40 CFR Section 50.14(b)(5).

40 CFR Sections 50.14(b)(8)(i) through (iii) states that “[t]he not reasonably controllable or preventable criterion has two prongs that the State must demonstrate: prevention and control. (ii) The Administrator shall determine an event is not reasonably preventable if the State shows that reasonable measures to prevent the event were applied at the time of the event. (iii) The Administrator shall determine that an event is not reasonably controllable if the State shows that reasonable measures to control the impact of the event on air quality were applied at the time of the event.”

Regarding whether the event was not reasonably preventable, the revised exceptional events rule has specific regulations for high wind dust events that exempt a State from needing to provide a case-specific

justification that the event was not reasonably preventable (40 CFR Section 50.14(b)(5)(iv)). In keeping with the specific high wind dust event regulation, and because the high winds that entrain the windblown dust are by nature unpreventable, a case-specific justification that the high wind dust event on April 25, 2016 was not preventable is not needed or presented in this documentation.

Regarding whether the event was not reasonably controllable, 40 CFR Section 50.14(b)(8)(iv) states that EPA “shall assess the reasonableness of available controls for anthropogenic sources based on information available as of the date of the event”. Additionally, 40 CFR Section 50.14(b)(8)(v) provides deference to controls in a state implementation plan that have been approved by EPA within five years of the event date, “the Administrator shall consider enforceable control measures implemented in accordance with a state implementation plan...approved by the EPA within 5 years of the date of the event, that address the event-related pollutant and all sources necessary to fulfill the requirements of the Clean Air Act for the state implementation plan...to be reasonable controls with respect to all anthropogenic sources that have or may have contributed to the monitored exceedance or violation.”

The *MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area* contains a wide variety of control measures and projects that have been implemented to reduce and control PM₁₀ emissions, including PM₁₀ emissions generated under high wind conditions, which were in place and implemented at the time of the event. Requirements to reduce and control PM₁₀ emissions in the plan apply to a broad range of sources including: unpaved roads and shoulders, leaf blowers, unpaved parking lots, vacant lots, sweeping streets with certified sweepers, off-road vehicle use, open and recreational burning, residential wood burning, covered vehicle loads, dust generating operations, nonmetallic mineral processing, and other unpermitted sources. EPA published final approval of the MAG 2012 Five Percent Plan on June 10, 2014 (79 FR 33107).

On September 12, 2016 the U.S. Court of Appeals for the Ninth Circuit issued an opinion in the lawsuit filed by the Arizona Center for Law in the Public Interest (*Bahr v. U.S. EPA*) to challenge the Environmental Protection Agency approval of the MAG 2012 Five Percent Plan. The Court upheld EPA’s determination that the control measures in the plan did not need to be updated and also upheld EPA’s exclusion of PM₁₀ exceedances in 2011 and 2012 as exceptional events caused by high wind dust events. The Court remanded the contingency measures in the plan to EPA for further consideration. Because EPA has approved the MAG 2012 Five Percent Plan within five years of the high wind dust event, and the approved plan addresses the event-related pollutant and all sources necessary to fulfill the requirements of the Clean Air Act, and because the State is not currently under obligation to revise the state implementation plan, the controls in the MAG 2012 Five Percent Plan are considered reasonable controls with respect to all anthropogenic sources that have or may have contributed to the monitored exceedance.

Specific to high wind dust events, 40 CFR Section 50.14(b)(5)(v) states that “[w]ith respect to the not reasonably controllable criterion of paragraph (c)(3)(iv)(D) of this section, dust controls on an anthropogenic source shall be considered reasonable in any case in which the controls render the anthropogenic source as resistant to high winds as natural undisturbed lands in the area affected by the high wind dust event. The Administrator may determine lesser controls reasonable on a case-by-case basis.”

When evaluating this regulation, EPA considers whether wind speeds were above the high wind threshold (25 mph default) during the event as an important indicator for whether or not the implemented controls were reasonable. In the preamble to the revised exceptional events rule, EPA states that, “[t]he EPA will continue to consider an area’s high wind threshold when reviewing demonstrations for events in a nonattainment or maintenance area where the EPA has approved a SIP, TIP or FIP within 5 years of the date of the event. For a demonstration in such a case, the not reasonably controllable criterion hinges only

on implementation of the control measures in the SIP, TIP or FIP, not on the content of those measures. For events with sustained wind speeds above the high wind threshold that occur simultaneously with high monitored PM concentrations, it is very plausible that SIP, TIP, or FIP controls were being implemented and the high PM concentrations resulted from emissions generated by sources in the area despite implementation of those controls...Therefore, the comparison of sustained wind speeds during an event to the high wind threshold will help the EPA Regional offices determine what evidence must be included in a demonstration. Specifically, it will inform the evidence required for the not reasonably controllable or preventable criteria, the possibility of noncompliance, or emissions from non-event sources.”

The clear causal relationship demonstration in Chapter III of this documentation clearly establishes that high PM₁₀ concentrations at the exceeding monitor and throughout the nonattainment area occurred when sustained wind speeds were over the high wind threshold of 25 mph. This provides evidence that (1) the controls in place within the Maricopa County PM₁₀ nonattainment area and at the exceeding monitor during the high wind dust event on April 25, 2016 meet the requirements of 40 CFR Section 50.14(b)(5)(v) by rendering anthropogenic sources as resistant to high winds as natural undisturbed lands, and that (2) source noncompliance is less likely given the severity of the wind speeds.

Lastly, 40 CFR Section 50.14(b)(8)(viii) requires that the State must include the following components in a demonstration that addresses the not reasonably controllable or preventable criterion for prescribed fire events and certain high wind dust events: “(A) Identification of the natural and anthropogenic sources of emissions causing and contributing to the monitored exceedance or violation, including the contribution from local sources. (B) Identification of the relevant state implementation plan, tribal implementation plan, or federal implementation plan or other enforceable control measures in place for sources identified in paragraph...(A) of this section and the implementation status of these controls. (C) Evidence of effective implementation and enforcement of the measures identified in paragraph...(B) of this section.” The following sections satisfy the requirements of 40 CFR Section 50.14(b)(8)(viii).

Identification of Natural and Anthropogenic Sources of Emissions

As discussed in the narrative conceptual model and the clear causal relationship demonstration, the sources of the windblown dust in the high wind dust event on April 25, 2016 include both natural and anthropogenic sources. Windblown dust was both transported to, and generated within, the Maricopa County PM₁₀ nonattainment area. Because of the widespread nature of the windblown dust as seen in the visibility photo in Figure 3–28 and discussed in the National Weather Service forecast, exact source locations are not possible to identify.

The most likely natural sources given the prevailing wind patterns of the high wind event include the desert areas of the Maricopa County PM₁₀ nonattainment area, western Arizona, and southeastern California. The most likely anthropogenic sources to contribute to the exceedance at the West 43rd Avenue monitor include those sources located immediately upwind (southwest) of the monitor. These sources may include, but are not limited to: vacant lots, paved road dust, unpaved road dust, agricultural fields, sand and gravel operations, industrial haul roads, concrete production facilities, and other permitted facilities that may produce fugitive dust in the form of PM₁₀ emissions. Residential and commercial land uses are also located within the immediate area. It is important to point out that the area immediately upwind of the exceeding West 43rd Avenue monitor contains a mix of natural and anthropogenic sources. The natural sources immediately upwind of the monitor include a dry riverbed and undeveloped pockets of desert areas. Figure 4–1 displays a recent aerial photo (2015) of the area immediately upwind (approximately four miles) of the West 43rd Avenue monitor.

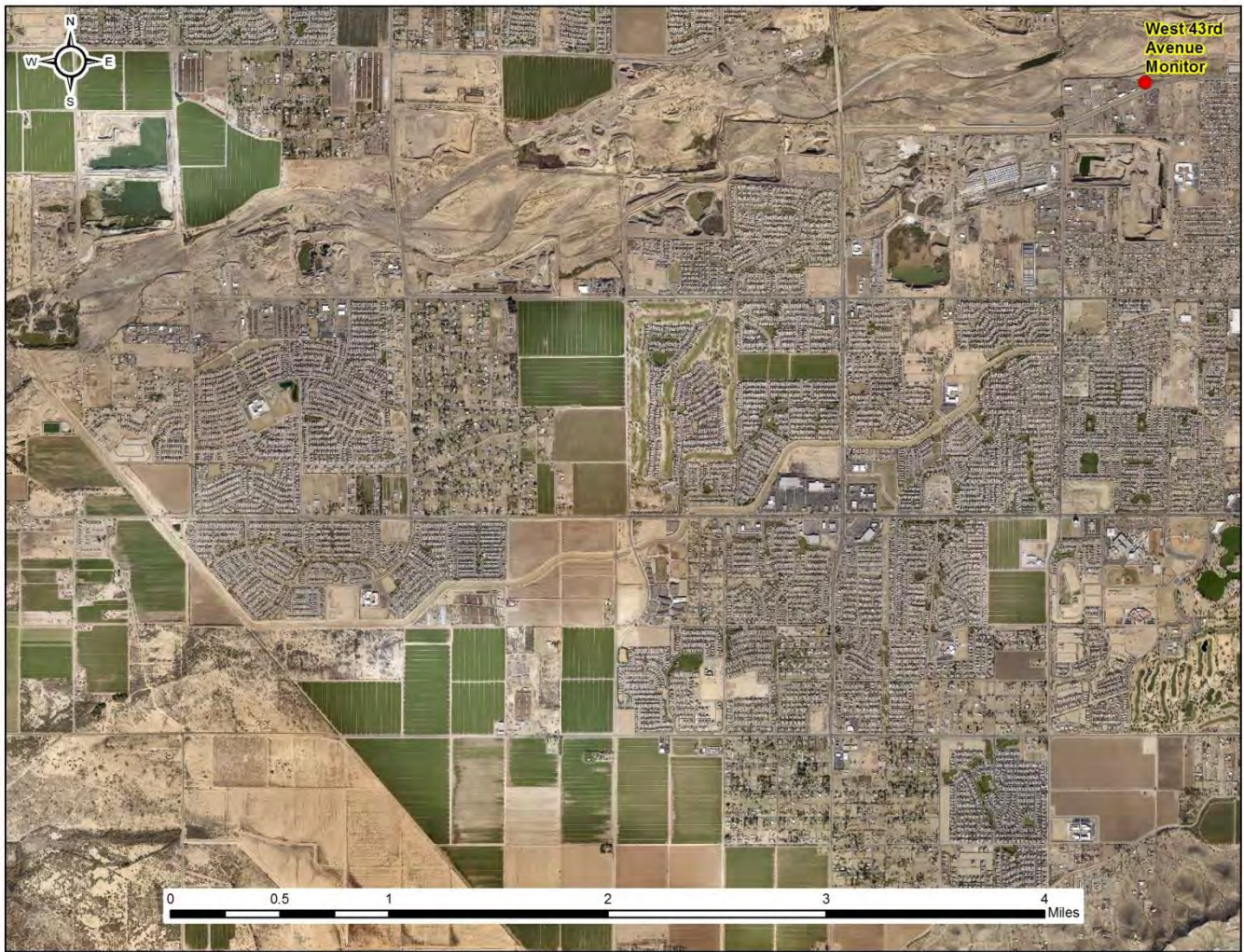


Figure 4-1. Aerial photo of the immediate area upwind of the exceeding West 43rd Avenue monitor.

Identification of Relevant Control Measures

As discussed above, the *MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area* is the latest state implementation plan approved by EPA. This plan contains a wide variety of control measures and projects that have been, and are being, implemented to reduce and control PM₁₀ emissions, including PM₁₀ emissions generated under high wind conditions, which were in place and implemented at the time of the event. Requirements to reduce and control PM₁₀ emissions in the plan apply to a broad range of sources including: unpaved roads and shoulders, leaf blowers, unpaved parking lots, vacant lots, sweeping streets with certified sweepers, off-road vehicle use, open and recreational burning, residential wood burning, covered vehicle loads, dust generating operations, nonmetallic mineral processing, and other unpermitted sources. Table 4–1 lists the control measures included in the MAG 2012 Five Percent Plan.

Table 4-1. Control Measures included in the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area.

Arizona Revised Statutes (A.R.S.)	Description
A.R.S. § 9-500.04. Only A.3., A.5., A.6., A.7., A.8., A.9. and H.	Air quality control; definitions [city and town requirements in Area A regarding targeting unpaved roads and shoulders; leaf blower restrictions; restrictions related to parking, maneuvering, ingress and egress areas and vacant lots; requirement for certified street sweepers]
A.R.S. § 9-500.27.	Off-road vehicle ordinance; applicability; violation; classification
A.R.S. § 11-871. Only A., B. and D.4.	Emissions control; no burn; exemptions; penalty [no burn restriction for any HPA day, increased civil penalty]
A.R.S. § 11-877.	Air quality control measures [county leaf blower restrictions]
A.R.S. § 28-1098. Only A. and C.1.	Vehicle loads; restrictions; civil penalties [for safety or air pollution prevention purpose]
A.R.S. § 49-424. Only 11.	Duties of department [develop and disseminate air quality dust forecasts for the Maricopa County PM-10 nonattainment area]
A.R.S. § 49-457.01.	Leaf blower use restrictions and training; leaf blower equipment sellers; informational material; outreach; applicability
A.R.S. § 49-457.03.	Off-road vehicles; pollution advisory days; applicability; penalties
A.R.S. § 49-457.04.	Off-highway vehicle and all-terrain vehicle dealers; informational material; outreach; applicability
A.R.S. § 49-457.05. Only A., B., C., D. and I.	Dust action general permit; best management practices; applicability; definitions
A.R.S. § 49-474.01. Only A.4., A.5., A.6., A.7., A.8., A.11., B. and H.	Additional board duties in vehicle emissions control areas; definitions [county requirements for stabilization of targeted unpaved roads, alleys and shoulders; restrictions related to parking, maneuvering, ingress and egress areas and vacant lots; requirement for certified street sweepers]
A.R.S. § 49-474.05.	Dust control; training; site coordinators
A.R.S. § 49-474.06.	Dust control; subcontractor registration; fee
A.R.S. § 49-501. Only A.2., B.1., C., F. and G.	Unlawful open burning; exceptions; civil penalty; definitions [ban on outdoor fires from May 1 to September 30; deletion of recreational purpose exemption; no burn day restrictions; penalty provision]
A.R.S. § 49-541. Only 1.	Definitions [Area A]
Maricopa County Air Quality Department Rules	Description
310	Fugitive Dust from Dust-Generating Operations Adopted 1/27/10 and submitted to EPA 4/12/10 [Notice of Final Rulemaking 75 FR 78167; 12/15/10]
310.01	Fugitive Dust From Non-Traditional Sources of Fugitive Dust Adopted 1/27/10 and submitted to EPA 4/12/10 [Notice of Final Rulemaking 75 FR 78167; 12/15/10]
314	Open Outdoor Fires and Indoor Fireplaces at Commercial and Institutional Establishments Adopted 3/12/08 and submitted to EPA 7/10/08 [Notice of Final Rulemaking 74 FR 57612; 11/9/09]

Table 4–1 (Continued)

Maricopa County Air Quality Department Rules	Description
316	Nonmetallic Mineral Processing Adopted 3/12/08 and submitted to EPA 7/10/08 [Notice of Final Rulemaking 74 FR 58553; 11/13/09]
Appendix C	Fugitive Dust Test Methods Adopted 3/26/08 and submitted to EPA 7/10/08 [Notice of Final Rulemaking 75 FR 78167; 12/15/10]
Maricopa County Ordinance	Description
P-26	Residential Woodburning Restriction Adopted 3/26/08 and submitted to EPA 7/10/08; [Notice of Final Rulemaking 74 FR 57612; 11/9/09]
Appendices to the Plan	Description
Appendix C, Exhibit 1	Arizona Revised Statutes Listed in Table 4-1
Appendix C, Exhibit 2	Maricopa County Resolution to Evaluate Measures in the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area
Appendix C, Exhibit 3	Arizona Department of Environmental Quality Dust Action General Permit
Appendix C, Exhibit 4	Arizona Department of Environmental Quality Commitment to Revise the MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area if Necessary for the Emerging and Voluntary Measure

In addition to the statutes, rules and regulations listed in Table 4–1, other PM₁₀ reducing control measures (e.g., paving of unpaved roads, Agricultural Best Management Practices Program, Pinal County Fugitive Dust rules, etc.) have been committed to, and implemented by, local jurisdictions throughout the Maricopa County PM₁₀ nonattainment area, and incorporated into the Arizona SIP through prior PM₁₀ plans, such as the *Revised MAG 1999 Serious Area Particulate Plan for PM-10 for the Maricopa County Nonattainment Area*, and in separate EPA actions.

Implementation and Enforcement of Control Measures

The Maricopa County Air Quality Department (MCAQD) is prepared to proactively respond to high wind dust events and protect human health and well-being. MCAQD's approach consists of two primary components: routine proactive inspections, as well as surveillance inspections, conducted both during and after significant events. MCAQD routinely inspects dust control-permitted sites and increases the frequency of inspections for permits covering areas of ten acres or more. Non-metallic surface mining sources under Rule 316 are also regularly inspected multiple times every year. Maricopa County also responds to the majority of air quality complaints within 24 hours.

Maricopa County monitors the five-day Maricopa County Dust Control Forecast issued by ADEQ to identify the potential for elevated PM₁₀ pollution levels due to high winds or stagnant conditions. When a High Pollution Advisory (HPA) is issued for Maricopa County, MCAQD conducts additional increased

surveillance before, during, and after the forecast event(s). MCAQD also conducts event surveillance and post-event activities after an exceptional event that had not been forecast (i.e., those instances in which an HPA had not been issued).

The Maricopa County Dust Control Forecast issued on April 24, 2016, indicated a Moderate risk for unhealthy PM₁₀ levels, due to expected sustained winds of 15-20 mph with the passage of the cold front. Actual sustained winds of 20-30 mph during the event on April 25, 2016 exceeded forecast levels, leading to the exceedance at the West 43rd Avenue monitor.

During the event, MCAQD dispatched an inspector to do reconnaissance in the vicinity of the exceeding West 43rd Avenue monitor during the 12pm hour. The inspector did not find any rule violations or remark about significant anthropogenic sources of blowing dust in the area.

Pre-event surveillance consists of surveying high-risk areas for any dust-generating activities, educating sources of the impending HPA event, and issuing violations for failure to comply with local, state, or federal regulations. During the event, MCAQD inspectors survey high-risk areas to confirm that control measures are in place, document any violations, and contact other regulatory agencies if necessary. Post-event activities include continued surveys of high-risk areas, re-inspecting sources within two business days of receiving a violation, and an internal MCAQD debriefing of event activities.

Currently, a total of 16 MCAQD air monitoring sites are equipped to allow the automatic reporting of monitored readings at 5-minute intervals. The real-time data reporting system includes a mechanism to alert MCAQD inspectors when PM₁₀ concentrations are elevated. The system allows MCAQD inspectors to review concentrations at the monitor and to consult the National Weather Service website to check for weather event activity. This capability allows the MCAQD responder to identify regional events and monitor specific issues. If necessary, the MCAQD responders can inform nearby stakeholders and local governments of the elevated PM₁₀ concentrations.

An evaluation of all inspection reports, air quality complaints, compliance reports, and other documentation indicate no evidence of unusual anthropogenic-based PM₁₀ emissions. During the time period of April 22 through April 28, 2016, MCAQD inspectors conducted a total of 306 inspections of permitted facilities, of which 188 were at fugitive dust sources. Additionally, MCAQD conducted 61 inspections on vacant lots and unpaved parking lots during this period.

During this 7-day period, a total of 19 Notice of Violations were issued county-wide for PM₁₀ and non-PM₁₀-related violations. No violations were issued to fugitive dust sources within a 4-mile radius of the exceeding West 43rd Avenue site.

Also during this 7-day period, a total of 61 vacant lots were inspected, but no 60-day letters were issued for non-compliant vacant lots and/or unpaved parking lots.

MCAQD was prepared for any complaints received due to the high wind event. During the 7 day period from April 22 through April 28, 2016, MCAQD received 47 complaints, of which 36 were windblown dust or PM₁₀ related. Nine of these complaints, located at 4 unique locations, were located within 4 miles of the exceeding West 43rd Avenue monitor. These complaints consisted of:

- A concrete batch plant at 43rd Avenue and Broadway Road creating dust when loading cement. Complaints made on 4/26/16.

- Blowing dust from a vacant lot at 47th Avenue and Southern Avenue, a property owned by the City of Phoenix. Six of the complaints were about this large vacant property and concerned such things as dust blowing from horseback riding in the area. The complaints occurred on 4/25/16 and 4/26/16.
- A construction site at 55th Avenue and Lower Buckeye Road was creating dust. The complaint occurred on 4/25/16.
- A construction site at 63rd Avenue and Broadway Road was creating dust. The complaint occurred on 4/27/16.

Inspections were completed for each of these complaints and no issues or violations were noted, though some complaints were kept open for further observations. Additionally, during the period of April 22, 2016 through April 28, 2016, no unusual agricultural activity in the upwind vicinity of the exceeding West 43rd Avenue monitor was noted by the Arizona Department of Environmental Quality.

Conclusion

In summary, the information presented in this chapter addresses whether the high wind dust event on April 25, 2016 was not reasonably preventable or controllable. EPA's approval of the *MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area* on June 10, 2014 allows the control measures in that plan to be established as reasonable controls. Sustained wind speeds were above the high wind threshold during the event, making it less likely that uncontrolled anthropogenic sources were the main source of the windblown dust emissions. The natural and anthropogenic sources of windblown dust during the event were identified, along with the enforceable control measures in place and implemented during the event. Extensive documentation of enforcement of the implemented control measures was provided by the Maricopa County Air Quality Department and the Arizona Department of Environmental Quality, revealing no evidence of unusual anthropogenic-based PM₁₀ emissions. For these reasons, the information presented in this chapter clearly demonstrates that the high wind dust event on April 25, 2016 was neither reasonably preventable nor controllable.

V. SUMMARY CONCLUSION

The documentation presented in the preceding chapters provides ample weight of evidence that the exceedance of the PM₁₀ standard on April 25, 2016 at the West 43rd Avenue monitor in the Maricopa County nonattainment area was caused by a high wind dust event, qualifying the exceedance for exclusion under the revised exceptional events rule. A bulleted summary of the demonstrations included in this documentation that meet the requirements of 40 CFR Sections 50.14(c)(3)(iv)(A) through (E) is provided below:

- The narrative conceptual model discussed the meteorological conditions (spring trough and dry cold front) that led to the creation of the high wind dust event on April 25, 2016. The narrative highlighted that sustained winds of 20 to 30 mph and gusts of 40 to 45 mph were sufficient to transport and generate windblown dust from natural sources and overwhelm reasonable controls on anthropogenic sources. Windblown dust from the high wind dust event was first noted by the National Weather Service in southeastern California, and then progressed into western Arizona and the Maricopa County PM₁₀ nonattainment area with the passing of the dry cold front. Tables and figures showing PM₁₀ concentrations during the event were included with the narrative, indicating the PM₁₀ concentrations on April 25, 2016 were elevated 3 to 6 times higher than concentrations on April 24, 2016, throughout the nonattainment area.
- The monitored PM₁₀ concentration on April 25, 2016 at the exceeding West 43rd Avenue monitor was compared to historical concentrations at the site in several analyses. The analyses confirm a clear causal relationship between the exceedance and the high wind dust event as compared to historical high wind dust event days, non-event exceedance days, and non-exceedance days.

In addition to the comparison to historical concentrations, figures displaying the chronological and spatial distribution of wind, visibility and PM₁₀ concentration data confirm that (1) sustained winds above 25 mph were high enough to entrain significant windblown dust from natural desert areas and disturbed, anthropogenic source areas subject to reasonable controls; (2) PM₁₀ concentrations peaked when winds speeds peaked; and (3) visibility conditions throughout the nonattainment area were degraded as a result of generated and transported windblown dust from the high wind dust event. These analyses taken as a whole provide strong weight of evidence that the high wind dust event affected air quality in such a way that there exists a clear causal relationship between the high wind dust event on April 25, 2016 and the PM₁₀ exceedance at the West 43rd Avenue monitor on April 25, 2016, thus satisfying the clear causal relationship criterion.

- The comparison to historical concentrations and the clear causal relationship demonstration found that high wind dust events can frequently recur at the exceeding West 43rd Avenue monitor and that the PM₁₀ emissions which caused the exceedance at the West 43rd Avenue monitor were associated with windblown dust generated and transported by sustained wind speeds that exceeded the default high wind threshold of 25 mph. EPA states that, “[f]or high wind dust events, if sustained wind speeds are above the high wind threshold and the anthropogenic emissions sources are reasonably controlled, it is more likely that human activity plays little or no direct role in causing emissions.” Since reasonable controls were in place on all significant anthropogenic sources of windblown dust in the Maricopa County PM₁₀ nonattainment area during the event and sustained winds were greater than 25 mph, the high wind dust event on April 25, 2016, qualifies as a natural event.

- EPA's approval of the *MAG 2012 Five Percent Plan for PM-10 for the Maricopa County Nonattainment Area* on June 10, 2014 allows the control measures in that plan to be established as reasonable controls. Sustained wind speeds were above the high wind threshold during the event, making it less likely that uncontrolled anthropogenic sources were the main source of the windblown dust emissions. The natural and anthropogenic sources of windblown dust during the event were identified, along with the enforceable control measures in place and implemented during the event. Extensive documentation of enforcement of the implemented control measures was provided by the Maricopa County Air Quality Department and the Arizona Department of Environmental Quality, revealing no evidence of unusual anthropogenic-based PM₁₀ emissions. For these reasons, the high wind dust event on April 25, 2016 was neither reasonably preventable nor controllable.

APPENDIX A

ADEQ FORECAST PRODUCTS



MARICOPA COUNTY DUST CONTROL FORECAST

ISSUED Sunday, April 24, 2016

Five-day weather outlook:

Expect surface winds around 15-20 mph tomorrow in the Valley as the next trough moves through the Southwest. Unfortunately, as winds pick up speed, PM-10 becomes an issue. These strong winds have the potential to result in a slightly higher than the normal PM-10 activity we've seen in the Valley for the past few days. Isolated pockets of dust are possible. Therefore, expect to see particulate concentrations in the mid to upper Good range with a chance to hit the low Moderates. -P.Patel

R I S K F A C T O R S

	<u>WINDS</u>	<u>STAGNATION</u>	<u>UNHEALTHY PM-10 RISK LEVEL</u>
Day 1: Mon. 4/25/2016	Southerly winds 5 to 10 mph becoming southwesterly 20 to 25 mph, higher gusts possible.	+ No stagnation expected.	= MODERATE
Day 2: Tue. 4/26/2016	Light winds early becoming west-southwesterly 10 to 20 mph.	+ Overnight and morning stagnation.	= LOW
Day 3: Wed. 4/27/2016	Light winds early becoming west-southwesterly 5 to 15 mph.	+ Overnight and morning stagnation.	= LOW

EXTENDED OUTLOOK

Day 4: Thu. 4/28/2016	Westerly winds around 10-15 mph.	+ Stagnation not expected.	= LOW
Day 5: Fri. 4/29/2016	Light winds.	+ Stagnation not expected.	= LOW

The Maricopa County Dust Control Action Forecast is issued to assist in the planning of work activities to help reduce dust pollution. To review the complete air quality forecast for the Phoenix metropolitan area, as well as the health impacts for different air pollutants refer to ADEQ's Air Quality Forecast at <http://www.azdeq.gov/environ/air/ozone/ensemble.pdf>.

Updated 4/4/2016



MARICOPA COUNTY DUST CONTROL FORECAST

ISSUED Monday, April 25, 2016

Five-day weather outlook:

A dry cold front approaches from the west this morning. Gusts in the Valley have already hit between 20 and 30 mph before 8 AM at some sites. Coverage and strength of winds increase during the afternoon. Can't rule out 40+ mph gusts at times. This is a region wide event and the National Weather Service has issued Wind Advisory products for nearly all of Arizona.

The last windy period for Metro Phoenix was back on April 15. Upper Moderates for PM-10 were observed. No rain has occurred since that date and projected winds are similar in nature, so pockets of blowing dust should be expected today. Winds begin to calm down later in the evening, but get on the breezy side again Tuesday afternoon. Thursday is when the next storm gets here and there might be enough moisture and instability for a few showers and t-storms. Stay tuned for additional information on that one. Friday and Saturday will feature more breezy afternoons. Daily risk levels beyond today are set at Low, for now.

—J.Malloy

R I S K F A C T O R S

	<u>WINDS</u>	<u>STAGNATION</u>	<u>UNHEALTHY PM-10 RISK LEVEL</u>
Day 1: Tue. 4/26/2016	Light winds early becoming west-southwesterly 10 to 20 mph.	+ Overnight and morning stagnation.	= LOW
Day 2: Wed. 4/27/2016	Light winds early becoming west-southwesterly 5 to 15 mph.	+ Overnight and morning stagnation.	= LOW
Day 3: Thu. 4/28/2016	Southwesterly winds around 10-15 mph.	+ Stagnation not expected.	= LOW

EXTENDED OUTLOOK

Day 4: Fri. 4/29/2016	Light winds early becoming west-southwesterly 10 to 20 mph.	+ Stagnation not expected.	= LOW
Day 5: Sat. 4/30/2016	Light winds early becoming west-southwesterly 10 to 20 mph.	+ Stagnation not expected.	= LOW

The Maricopa County Dust Control Action Forecast is issued to assist in the planning of work activities to help reduce dust pollution. To review the complete air quality forecast for the Phoenix metropolitan area, as well as the health impacts for different air pollutants refer to ADEQ's Air Quality Forecast at <http://www.azdeq.gov/enviro/air/ozone/ensemble.pdf>.

Updated 4/4/2016



MARICOPA COUNTY DUST CONTROL FORECAST

ISSUED Tuesday, April 26, 2016

Five-day weather outlook:

The cold frontal passage occurred a bit earlier than expected yesterday with winds picking up speed late morning rather than the mid to late afternoon. Because of this, PM-10 activity started a bit earlier as well. Strong winds associated with the front resulted in Valley wide hazy conditions that forced an exceedance at the West 43rd monitor while other monitors finished the day in the mid-Moderates.

As you may have noticed this morning, it's still a bit hazy here in the Valley since PM-10 levels are still slightly elevated. However, they should be on a decreasing trend as the day progresses. Moving forward, we'll be under this trough passage pattern for the remainder of this week. These upper-level disturbances will continue to bring breezy winds in the Valley with a chance for small amounts of scattered precipitation this weekend.

—P.Patel

R I S K F A C T O R S

	<u>WINDS</u>	<u>STAGNATION</u>	<u>UNHEALTHY PM-10 RISK LEVEL</u>
Day 1: Wed. 4/27/2016	Light winds early becoming west-southwesterly 5 to 15 mph.	+ Overnight and morning stagnation.	= LOW
Day 2: Thu. 4/28/2016	Southwesterly winds around 15-20 mph.	+ Stagnation not expected.	= MODERATE
Day 3: Fri. 4/29/2016	Light winds early becoming west-southwesterly 10 to 15 mph.	+ Stagnation not expected.	= LOW

EXTENDED OUTLOOK

Day 4: Sat. 4/30/2016	Westerly winds around 20-25 mph.	+ Stagnation not expected.	= MODERATE
Day 5: Sun. 5/1/2016	Winds light and variable.	+ Light stagnation expected.	= LOW

The Maricopa County Dust Control Action Forecast is issued to assist in the planning of work activities to help reduce dust pollution. To review the complete air quality forecast for the Phoenix metropolitan area, as well as the health impacts for different air pollutants refer to ADEQ's Air Quality Forecast at

<http://www.azdeq.gov/environ/air/ozone/ensemble.pdf>.

Updated 4/4/2016



AIR QUALITY FORECAST ISSUED Sunday, April 24, 2016

This report is updated by 1:00 p.m. Sunday thru Friday and is valid for areas within and bordering Maricopa County in Arizona

FORECAST DATE	YESTERDAY <u>Sat, 4/23/2016</u>	TODAY <u>Sun, 4/24/2016</u>	TOMORROW <u>Mon, 4/25/2016</u>	EXTENDED <u>Tue, 4/26/2016</u>
NOTICES				
AIR POLLUTANT	Highest AQI Reading/Site (*Preliminary data only*)			
O3	90 Apache Junction	50 Good	44 Good	48 Good
CO	7 Diablo	8 Good	7 Good	6 Good
PM-10	32 Dysart	44 Good	46 Good	46 Good
PM-2.5	25 South Phoenix	28 Good	30 Good	30 Good

O3 = Ozone CO = Carbon Monoxide PM-10 = Particles 10 microns & smaller PM-2.5 = Particles smaller than 2.5 microns
 "PM-10 or PM-2.5 Health Watch" (HW) means that the highest concentration of PM-10 or PM-2.5 may approach the federal health standard.
 "High Pollution Advisory" (HPA) means that the highest concentration of OZONE, PM-10, or PM-2.5 may exceed the federal health standard.

Health Statements	
Sunday, 04/24/2016	No health impacts are expected.
Monday, 04/25/2016	No health impacts are expected.

SYNOPSIS AND DISCUSSION

Note: The Environmental Protection Agency has reduced the ozone health standard from 75 parts per billion (ppb) to 70 ppb. On January 1, 2016, the ADEQ Forecast Team began forecasting based off this new standard. For more information on the adjusted ozone standard click [here](#).

The presence of breezy winds yesterday kept ozone concentrations down in the Valley. With the next trough passage just around the corner, this trend is expected to continue. Expect surface winds around 15-20 mph tomorrow in the Valley that will help clear out the airshed and keep ozone down. Unfortunately, as winds pick up speed, PM-10 becomes an issue. These strong winds have the potential to result in a slightly higher than the normal PM-10 activity we've seen in the Valley for the past few days. Isolated pockets of dust are possible. Therefore, expect to see particulate concentrations in the mid to upper Good range with a chance to hit the low Moderates. Lastly, once the cold front associated with this trough passes through, temperatures will be cooler and level out in the upper-70s.

Check back on Sunday for a look ahead at next week's weather and air quality. Until then, have a great weekend! –P.Patel

USEFUL LINKS	
INTERACTIVE MAPS	http://alert.fcd.maricopa.gov/alert/Google/v3/air.html http://www.airnow.gov/
WEB CAMERA IMAGES	http://www.phoenixvis.net/

POLLUTION MONITOR READINGS FOR Saturday, April 23, 2016

O3 (OZONE)

SITE NAME	MAX 8-HR VALUE (PPB)	MAX AQI	AQI COLOR CODE
Alamo Lake	71	101	
Apache Junction	51	47	
Blue Point	52	48	
Buckeye	46	43	
Casa Grande	50	46	
Cave Creek	63	77	
Central Phoenix	51	47	
Dysart	54	50	
Falcon Field	52	48	
Fountain Hills	56	54	
Glendale	55	51	
Humboldt Mountain	61	71	
Phoenix Supersite	56	54	
Mesa	55	51	
North Phoenix	57	58	
Pinal Air Park	47	44	
Pinnacle Peak	53	49	
Queen Valley	55	51	
Rio Verde	58	61	
South Phoenix	50	46	

South Scottsdale	50	46	
Tempe	51	47	
Tonto Nat'l Mon.	54	50	
West Chandler	55	51	
West Phoenix	50	46	
Yuma	62	74	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.4	5	
Diablo	0.6	7	
Greenwood	0.3	3	
Phoenix Supersite	NOT AVBL	NOT AVBL	NOT AVBL
West Phoenix	0.3	3	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Buckeye	40.3	37	
Central Phoenix	29.8	27	
Combs School (Pinal County)	39.1	36	
Durango	21.7	19	
Dysart	35.4	32	
Glendale	19.0	18	
Greenwood	33.0	31	
Higley	44.6	41	
Maricopa (Pinal County)	26.5	24	
Phoenix Supersite	26.5	24	
Mesa	16.3	15	
North Phoenix	16.5	15	
South Phoenix	28.2	26	
South Scottsdale	33.8	31	
Tempe	18.8	17	
West Chandler	21.4	19	
West Forty Third	35.0	32	
West Phoenix	21.3	19	
Zuni Hills	34.1	31	

PM-2.5 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Diablo	5.0	21	
Durango	4.4	18	
Glendale	4.1	17	
Phoenix Supersite	4.7	20	
Mesa	4.3	18	
North Phoenix	3.6	15	
South Phoenix	5.9	25	
Tempe	4.8	20	
West Phoenix	4.5	19	

DESCRIPTION OF LOCAL AIR POLLUTANTS IN DETAIL



O3 (OZONE):

Description –

This is a secondary pollutant that is formed by the reaction of other primary pollutants (precursors) such as VOCs (volatile organic compounds) and NO_x (Nitrogen Oxides) in the presence of sunlight.

Sources – VOCs are emitted from motor vehicles, chemical plants, refineries, factories, and other industrial sources. NO_x is emitted from motor vehicles, power plants, and other sources of combustion.

Potential health impacts – Exposure to ozone can make people more susceptible to respiratory infection, result in lung inflammation, and aggravate pre-existing respiratory diseases such as asthma. Other effects include decrease in lung function, chest pain, and cough.

Unit of measurement – Parts per billion (ppb).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Curtail daytime driving, refuel cars and use gasoline-powered equipment as late in the day as possible.

CO (CARBON MONOXIDE):

Description – A colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely.

Sources – In cities, as much as 95 percent of all CO emissions emanate from automobile exhaust. Other sources include industrial processes, non-transportation fuel combustion, and natural sources such as wildfires. Peak concentrations occur in colder winter months.

Potential health impacts – Reduces oxygen delivery to the body's organs and tissues. The health threat is most serious for those who suffer from cardiovascular disease.

Unit of measurement – Parts per million (ppm).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Keep motor vehicle tuned properly and minimize nighttime driving.

PM-10 & PM-2.5 (PARTICLES):

Description – The term “particulate matter” (PM) includes both solid particles and liquid droplets found in air. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. Particles less than 10 micrometers in diameter tend to pose the greatest health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter are referred to as “fine” particles and are responsible for many visibility degradations such as the “Valley Brown Cloud” (see <http://www.phoenixvis.net/>). Particles with diameters between 2.5 and 10 micrometers are referred to as “coarse”.

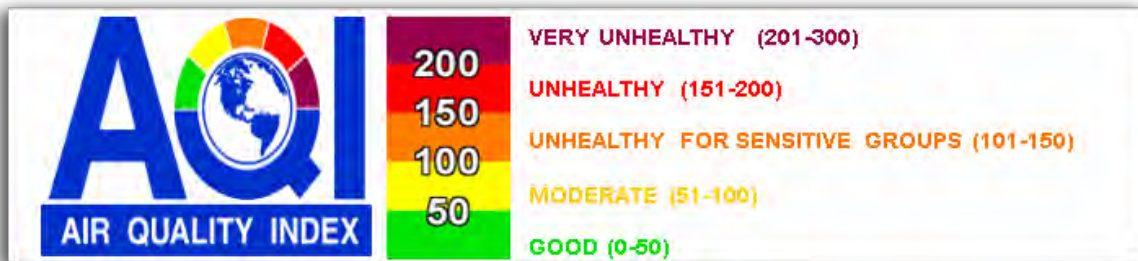
Sources – Fine = All types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Coarse = crushing or grinding operations and dust from paved or unpaved roads.

Potential health impacts – PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis.

Units of measurement – Micrograms per cubic meter (µg/m³)

Averaging interval – 24 hours (midnight to midnight).

Reduction tips – Stabilize loose soils, slow down on dirt roads, carpool, and use public transit.



AIR QUALITY FORECAST ISSUED Monday, April 25, 2016

This report is updated by 1:00 p.m. Sunday thru Friday and is valid for areas within and bordering Maricopa County in Arizona

FORECAST DATE NOTICES	YESTERDAY <u>Sun, 4/24/2016</u> Ozone Exceedance	TODAY <u>Mon, 4/25/2016</u>	TOMORROW <u>Tue, 4/26/2016</u>	EXTENDED <u>Wed, 4/27/2016</u>
AIR POLLUTANT	Highest AQI Reading/Site (*Preliminary data only*)			
O3	115 Rio Verde	44 Good	48 Good	58 Moderate
CO	6 Central Phoenix	7 Good	6 Good	6 Good
PM-10	29 West 43rd	72 Moderate	42 Good	44 Good
PM-2.5	29 South Phoenix	45 Good	31 Good	31 Good

O3 = Ozone CO = Carbon Monoxide PM-10 = Particles 10 microns & smaller PM-2.5 = Particles smaller than 2.5 microns
 "PM-10 or PM-2.5 Health Watch" (HW) means that the highest concentration of PM-10 or PM-2.5 may approach the federal health standard.
 "High Pollution Advisory" (HPA) means that the highest concentration of OZONE, PM-10, or PM-2.5 may exceed the federal health standard.

Health Statements	
Monday, 04/25/2016	Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.
Tuesday, 04/26/2016	No health impacts are expected.

SYNOPSIS AND DISCUSSION

Note: The Environmental Protection Agency has reduced the ozone health standard from 75 parts per billion (ppb) to 70 ppb. On January 1, 2016, the ADEQ Forecast Team began forecasting based off this new standard. For more information on the adjusted ozone standard click [here](#).

A dry cold front approaches from the west this morning. Gusts in the Valley have already hit between 20 and 30 mph before 8 AM at some sites. Coverage and strength of winds increase during the afternoon. Can't rule out 40+ mph gusts at times. This is a region wide event and the National Weather Service has issued Wind Advisory products for nearly all of Arizona. The winds will both benefit and hurt our air quality. On the positive, high dispersion rates won't allow the ozone plume to get established. Exceeding values that occurred yesterday likely drop into the Good AQI category today. The negative aspect concerns a blowing dust threat. The last windy period for Metro Phoenix was back on April 15. Upper Moderates for PM-10 were observed. No rain has occurred since that date and projected winds are similar in nature, so pockets of blowing dust should be expected. Winds begin to calm down later in the evening, but get on the breezy side again Tuesday afternoon. Thursday is when the next storm gets here and there might be enough moisture and instability for a few showers and t-storms.

Check back tomorrow for more. Until then, have a good day! –J.Malloy

USEFUL LINKS	
INTERACTIVE MAPS	http://alert.fcd.maricopa.gov/alert/Google/v3/air.html http://www.airnow.gov/
WEB CAMERA IMAGES	http://www.phoenixvis.net/

POLLUTION MONITOR READINGS FOR Sunday, April 24, 2016

O3 (OZONE)

SITE NAME	MAX 8-HR VALUE (PPB)	MAX AQI	AQI COLOR CODE
Alamo Lake	66	87	
Apache Junction	67	90	
Blue Point	70	100	
Buckeye	50	46	
Casa Grande	63	77	
Cave Creek	73	108	
Central Phoenix	64	80	
Dysart	58	61	
Falcon Field	68	93	
Fountain Hills	66	87	
Glendale	64	80	
Humboldt Mountain	66	87	
Phoenix Supersite	70	100	
Mesa	68	93	
North Phoenix	68	93	
Pinal Air Park	66	87	
Pinnacle Peak	67	90	

Queen Valley	71	101	
Rio Verde	75	115	
South Phoenix	62	74	
South Scottsdale	64	80	
Tempe	64	80	
Tonto Nat'l Mon.	67	90	
West Chandler	66	87	
West Phoenix	62	74	
Yuma	62	74	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.5	6	
Diablo	0.5	6	
Greenwood	0.4	5	
Phoenix Supersite	NOT AVBL	NOT AVBL	
West Phoenix	0.4	5	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Buckeye	31.6	29	
Central Phoenix	23.5	21	
Combs School (Pinal County)	31.5	29	
Durango	20	19	
Dysart	17.4	16	
Glendale	12.6	11	
Greenwood	26	24	
Higley	NOT AVBL	NOT AVBL	
Maricopa (Pinal County)	39.8	36	
Phoenix Supersite	20	19	
Mesa	15	14	
North Phoenix	12	11	
South Phoenix	24.9	22	
South Scottsdale	21.8	19	
Tempe	15.2	14	
West Chandler	20.7	19	
West Forty Third	31.2	29	
West Phoenix	18.3	17	
Zuni Hills	18.2	17	

PM-2.5 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Diablo	5	21	
Durango	5.9	25	
Glendale	2.9	12	
Phoenix Supersite	5.2	22	
Mesa	4.2	18	
North Phoenix	3	13	
South Phoenix	6.9	29	
Tempe	4.4	18	
West Phoenix	4.4	18	

DESCRIPTION OF LOCAL AIR POLLUTANTS IN DETAIL



O3 (OZONE):

Description –

This is a secondary pollutant that is formed by the reaction of other primary pollutants (precursors) such as VOCs (volatile organic compounds) and NO_x (Nitrogen Oxides) in the presence of sunlight.

Sources – VOCs are emitted from motor vehicles, chemical plants, refineries, factories, and other industrial sources. NO_x is emitted from motor vehicles, power plants, and other sources of combustion.

Potential health impacts – Exposure to ozone can make people more susceptible to respiratory infection, result in lung inflammation, and aggravate pre-existing respiratory diseases such as asthma. Other effects include decrease in lung function, chest pain, and cough.

Unit of measurement – Parts per billion (ppb).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Curtail daytime driving, refuel cars and use gasoline-powered equipment as late in the day as possible.

CO (CARBON MONOXIDE):

Description – A colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely.

Sources – In cities, as much as 95 percent of all CO emissions emanate from automobile exhaust. Other sources include industrial processes, non-transportation fuel combustion, and natural sources such as wildfires. Peak concentrations occur in colder winter months.

Potential health impacts – Reduces oxygen delivery to the body's organs and tissues. The health threat is most serious for those who suffer from cardiovascular disease.

Unit of measurement – Parts per million (ppm).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Keep motor vehicle tuned properly and minimize nighttime driving.

PM-10 & PM-2.5 (PARTICLES):

Description – The term “particulate matter” (PM) includes both solid particles and liquid droplets found in air. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. Particles less than 10 micrometers in diameter tend to pose the greatest health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter are referred to as “fine” particles and are responsible for many visibility degradations such as the “Valley Brown Cloud” (see <http://www.phoenixvis.net/>). Particles with diameters between 2.5 and 10 micrometers are referred to as “coarse”.

Sources – Fine = All types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Coarse = crushing or grinding operations and dust from paved or unpaved roads.

Potential health impacts – PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis.

Units of measurement – Micrograms per cubic meter (µg/m³)

Averaging interval – 24 hours (midnight to midnight).

Reduction tips – Stabilize loose soils, slow down on dirt roads, carpool, and use public transit.



AIR QUALITY FORECAST ISSUED Tuesday, April 26, 2016

This report is updated by 1:00 p.m. Sunday thru Friday and is valid for areas within and bordering Maricopa County in Arizona

FORECAST DATE NOTICES	YESTERDAY Mon, 4/25/2016	TODAY Tue, 4/26/2016	TOMORROW Wed, 4/27/2016	EXTENDED Thu, 4/28/2016
AIR POLLUTANT	Highest AQI Reading/Site (* Preliminary data only *)			
O3	80 Cave Creek	57 <i>Moderate</i>	67 <i>Moderate</i>	74 <i>Moderate</i>
CO	5 Diablo	6 <i>Good</i>	6 <i>Good</i>	5 <i>Good</i>
PM-10	111 West 43rd	42 <i>Good</i>	46 <i>Good</i>	51 <i>Moderate</i>
PM-2.5	50 Phoenix Supersite	31 <i>Good</i>	31 <i>Good</i>	34 <i>Good</i>

O3 = Ozone CO = Carbon Monoxide PM-10 = Particles 10 microns & smaller PM-2.5 = Particles smaller than 2.5 microns
 "PM-10 or PM-2.5 Health Watch" (HW) means that the highest concentration of PM-10 or PM-2.5 may approach the federal health standard.
 "High Pollution Advisory" (HPA) means that the highest concentration of OZONE, PM-10, or PM-2.5 may exceed the federal health standard.

Health Statements	
Tuesday, 04/26/2016	Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.
Wednesday, 04/27/2016	Unusually sensitive people should consider reducing prolonged or heavy exertion outdoors.

SYNOPSIS AND DISCUSSION

Note: The Environmental Protection Agency has reduced the ozone health standard from 75 parts per billion (ppb) to 70 ppb. On January 1, 2016, the ADEQ Forecast Team began forecasting based off this new standard. For more information on the adjusted ozone standard click [here](#).

The cold frontal passage occurred a bit earlier than expected yesterday with winds picking up speed late morning rather than the mid to late afternoon. Because of this, PM-10 activity started a bit earlier as well. Strong winds associated with the front resulted in Valley wide hazy conditions that forced an exceedance at the West 43rd monitor while other monitors finished the day in the mid-Moderates.

As you may have noticed this morning, it's still a bit hazy here in the Valley since PM-10 levels are still slightly elevated. However, they should be on a decreasing trend as the day progresses. Moving forward, we'll be under this trough passage pattern for the remainder of this week. These upper-level disturbances will continue to bring breezy winds in the Valley with a chance for small amounts of scattered precipitation this weekend. As for ozone, expect AQI to continue on in the Moderates.

Check back tomorrow for more. Until then, have a good day! –P.Patel

USEFUL LINKS	
INTERACTIVE MAPS	http://alert.fcd.maricopa.gov/alert/Google/v3/air.html http://www.airnow.gov/
WEB CAMERA IMAGES	http://www.phoenixvis.net/

POLLUTION MONITOR READINGS FOR Monday, April 25, 2016

O3 (OZONE)

SITE NAME	MAX 8-HR VALUE (PPB)	MAX AQI	AQI COLOR CODE
Alamo Lake	60	67	
Apache Junction	59	64	
Blue Point	61	71	
Buckeye	47	44	
Casa Grande	58	61	
Cave Creek	64	80	
Central Phoenix	58	61	
Dysart	52	48	
Falcon Field	60	67	
Fountain Hills	56	54	
Glendale	58	61	
Humboldt Mountain	57	58	
Phoenix Supersite	64	80	
Mesa	62	74	
North Phoenix	61	71	
Pinal Air Park	60	67	

Pinnacle Peak	57	58	
Queen Valley	62	74	
Rio Verde	64	80	
South Phoenix	58	61	
South Scottsdale	56	54	
Tempe	56	54	
Tonto Nat'l Mon.	59	64	
West Chandler	57	58	
West Phoenix	56	54	
Yuma	58	61	

CO (CARBON MONOXIDE)

SITE NAME	MAX 8-HR VALUE (PPM)	MAX AQI	AQI COLOR CODE
Central Phoenix	0.3	3	
Diablo	0.4	5	
Greenwood	0.2	2	
Phoenix Supersite	NOT AVBL	NOT AVBL	
West Phoenix	0.2	2	

PM-10 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Buckeye	106.2	76	
Central Phoenix	95.6	71	
Combs School (Pinal County)	103.1	75	
Durango	73.7	60	
Dysart	97.1	72	
Glendale	64.9	55	
Greenwood	106.1	76	
Higley	NOT AVBL	NOT AVBL	
Maricopa (Pinal County)	154.8	100	
Phoenix Supersite	85.1	66	
Mesa	44.6	41	
North Phoenix	50.7	46	
South Phoenix	70.5	58	
South Scottsdale	66.6	56	
Tempe	40.7	37	
West Chandler	77.2	62	
West Forty Third	175	111	
West Phoenix	71.6	59	
Zuni Hills	110.1	78	

PM-2.5 (PARTICLES)

SITE NAME	MAX 24-HR VALUE (µg/m3)	MAX AQI	AQI COLOR CODE
Diablo	8.7	36	
Durango	9.3	39	
Glendale	10.4	43	
Phoenix Supersite	11.9	50	
Mesa	7.9	33	
North Phoenix	8.2	34	
South Phoenix	9.4	39	
Tempe	7.1	30	
West Phoenix	9.2	38	

DESCRIPTION OF LOCAL AIR POLLUTANTS IN DETAIL



O3 (OZONE):

Description –

This is a secondary pollutant that is formed by the reaction of other primary pollutants (precursors) such as VOCs (volatile organic compounds) and NO_x (Nitrogen Oxides) in the presence of sunlight.

Sources – VOCs are emitted from motor vehicles, chemical plants, refineries, factories, and other industrial sources. NO_x is emitted from motor vehicles, power plants, and other sources of combustion.

Potential health impacts – Exposure to ozone can make people more susceptible to respiratory infection, result in lung inflammation, and aggravate pre-existing respiratory diseases such as asthma. Other effects include decrease in lung function, chest pain, and cough.

Unit of measurement – Parts per billion (ppb).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Curtail daytime driving, refuel cars and use gasoline-powered equipment as late in the day as possible.

CO (CARBON MONOXIDE):

Description – A colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely.

Sources – In cities, as much as 95 percent of all CO emissions emanate from automobile exhaust. Other sources include industrial processes, non-transportation fuel combustion, and natural sources such as wildfires. Peak concentrations occur in colder winter months.

Potential health impacts – Reduces oxygen delivery to the body's organs and tissues. The health threat is most serious for those who suffer from cardiovascular disease.

Unit of measurement – Parts per million (ppm).

Averaging interval – Highest eight-hour period within a 24-hour period (midnight to midnight)

Reduction tips – Keep motor vehicle tuned properly and minimize nighttime driving.

PM-10 & PM-2.5 (PARTICLES):

Description – The term “particulate matter” (PM) includes both solid particles and liquid droplets found in air. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. Particles less than 10 micrometers in diameter tend to pose the greatest health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter are referred to as “fine” particles and are responsible for many visibility degradations such as the “Valley Brown Cloud” (see <http://www.phoenixvis.net/>). Particles with diameters between 2.5 and 10 micrometers are referred to as “coarse”.

Sources – Fine = All types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. Coarse = crushing or grinding operations and dust from paved or unpaved roads.

Potential health impacts – PM can increase susceptibility to respiratory infections and can aggravate existing respiratory diseases, such as asthma and chronic bronchitis.

Units of measurement – Micrograms per cubic meter (µg/m³)

Averaging interval – 24 hours (midnight to midnight).

Reduction tips – Stabilize loose soils, slow down on dirt roads, carpool, and use public transit.

APPENDIX B

NWS METEOROLOGICAL OBSERVATIONS

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

(final) HOURLY OBSERVATIONS TABLE BUCKEYE MUNICIPAL AIRPORT (00226) BUCKEYE, AZ (04/2016)

Elevation: 1021 ft. above sea level

Latitude: 33.417

Longitude: -112.683

Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp (F) (C)	Wet Bulb Temp (F) (C)	Dew Point Temp (F) (C)	Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0015	0	CLR	10.00		72	22.0	52	10.9	30	1.0	21	11	200		28.68		M	AA		29.76	
25	0035	0	CLR	10.00		68	20.0	51	10.3	32	0.0	26	11	200		28.68		M	AA		29.76	
25	0055	0	FEW120	10.00		66	19.0	51	10.6	36	2.0	33	10	200		28.67		M	AA		29.75	
25	0115	0	FEW050 SCT120	10.00		66	19.0	51	10.6	36	2.0	33	9	210		28.67		M	AA		29.75	
25	0135	0	OVC120	10.00		66	19.0	52	11.2	39	4.0	37	M	M		28.66		M	AA		29.74	
25	0155	0	BKN120	10.00		66	19.0	53	11.6	41	5.0	40	8	210		28.66		M	AA		29.74	
25	0215	0	BKN120	10.00		68	20.0	56	13.0	45	7.0	44	7	210		28.66		M	AA		29.74	
25	0235	0	BKN120	10.00		68	20.0	56	13.3	46	8.0	45	7	210		28.66		M	AA		29.74	
25	0255	0	BKN120	10.00		66	19.0	55	12.8	46	8.0	49	0	000		28.66		M	AA		29.74	
25	0315	0	BKN120	10.00		66	19.0	54	12.1	43	5.0	43	0	000		28.66		M	AA		29.74	
25	0335	0	BKN120	10.00		66	19.0	55	12.6	45	7.0	47	8	230		28.66		M	AA		29.74	
25	0355	0	BKN120	10.00		66	19.0	54	12.1	43	5.0	43	9	230		28.66		M	AA		29.74	
25	0415	0	OVC120	10.00		66	19.0	54	12.1	43	5.0	43	10	230	16	28.66		M	AA		29.74	
25	0435	0	BKN120	10.00		66	19.0	52	11.2	39	4.0	37	13	230		28.66		M	AA		29.74	
25	0455	0	SCT120	10.00		66	19.0	51	10.6	36	2.0	33	13	220	17	28.66		M	AA		29.74	
25	0515	0	BKN120	10.00		64	18.0	49	9.7	34	1.0	33	10	230		28.66		M	AA		29.74	
25	0535	0	BKN120	10.00		64	18.0	49	9.7	34	1.0	33	14	230	17	28.66		M	AA		29.74	
25	0555	0	CLR	10.00		63	17.0	49	9.4	34	1.0	34	10	230		28.67		M	AA		29.75	
25	0615	0	CLR	10.00		63	17.0	48	9.0	32	0.0	31	14	230		28.68		M	AA		29.76	
25	0635	0	CLR	10.00		63	17.0	49	9.4	34	1.0	34	11	240		28.69		M	AA		29.77	
25	0655	0	CLR	10.00		63	17.0	49	9.4	34	1.0	34	11	230	20	28.69		M	AA		29.77	
25	0715	0	CLR	10.00		64	18.0	50	10.1	36	2.0	36	15	220	22	28.70		M	AA		29.78	
25	0735	0	CLR	10.00		66	19.0	51	10.6	36	2.0	33	16	220	22	28.71		M	AA		29.79	
25	0755	0	CLR	10.00		66	19.0	50	10.2	34	1.0	31	17	220	22	28.71		M	AA		29.80	
25	0815	0	CLR	10.00		68	20.0	51	10.6	34	1.0	29	14	210	20	28.71		M	AA		29.80	
25	0835	0	CLR	9.00		68	20.0	51	10.3	32	0.0	26	18	230	24	28.71		M	AA		29.80	
25	0855	0	CLR	10.00		68	20.0	51	10.3	32	0.0	26	16	220	24	28.73		M	AA		29.81	
25	0915	0	CLR	10.00		70	21.0	51	10.8	32	0.0	25	16	240	23	28.71		M	AA		29.80	
25	0935	0	CLR	10.00		70	21.0	51	10.8	32	0.0	25	15	230	21	28.71		M	AA		29.80	
25	0955	0	CLR	10.00		72	22.0	52	11.2	32	0.0	23	16	220	24	28.71		M	AA		29.80	
25	1015	0	CLR	10.00		72	22.0	52	11.2	32	0.0	23	16	220	23	28.71		M	AA		29.80	
25	1035	0	CLR	10.00		72	22.0	51	10.6	28	2.0	19	14	240	26	28.71		M	AA		29.79	
25	1055	0	CLR	10.00		73	23.0	52	10.8	28	2.0	19	21	200	25	28.70		M	AA		29.78	
25	1115	0	CLR	10.00		73	23.0	52	10.8	28	2.0	19	20	220	34	28.70		M	AA		29.78	
25	1135	0	CLR	5.00		77	25.0	50	10.2	16	9.0	10	24	240	30	28.68		M	AA		29.76	
25	1155	0	CLR	9.00		77	25.0	50	9.8	12	11.0	8	16	220	31	28.68		M	AA		29.76	
25	1215	0	CLR	8.00		77	25.0	50	10.0	14	10.0	9	25	230	38	28.67		M	AA		29.75	
25	1235	0	CLR	8.00		77	25.0	50	9.8	12	11.0	8	23	220	36	28.66		M	AA		29.74	
25	1255	0	CLR	9.00		77	25.0	50	10.0	14	10.0	9	29	230	36	28.66		M	AA		29.74	
25	1315	0	CLR	7.00		77	25.0	49	9.6	10	12.0s	8	24	240	38	28.65		M	AA		29.73	
25	1335	0	CLR	10.00		77	25.0	49	9.6	10	12.0	8	25	250	34	28.64		M	AA		29.72	
25	1355	0	CLR	7.00		77	25.0	50	10.0	14	10.0	9	26	230	38	28.64		M	AA		29.72	
25	1415	0	CLR	7.00		77	25.0	50	10.0	14	10.0	9	22	250	34	28.64		M	AA		29.72	
25	1435	0	CLR	10.00		77	25.0	50	10.0	14	10.0	9	23	260	34	28.64		M	AA		29.72	
25	1455	0	CLR	10.00		77	25.0	50	10.2	16	9.0	10	22	240	34	28.64		M	AA		29.72	
25	1515	0	CLR	10.00		77	25.0	50	10.2	16	9.0	10	23	260	34	28.63		M	AA		29.71	
25	1535	0	CLR	10.00		77	25.0	50	10.2	16	9.0	10	22	230	32	28.63		M	AA		29.71	
25	1555	0	CLR	7.00		77	25.0	51	10.4	18	8.0	11	29	230	37	28.62		M	AA		29.70	
25	1615	0	CLR	8.00		75	24.0	50	9.7	16	9.0	11	20	240	32	28.62		M	AA		29.70	
25	1635	0	CLR	10.00		75	24.0	50	9.7	16	9.0	11	21	230	33	28.62		M	AA		29.70	
25	1655	0	CLR	10.00		75	24.0	50	9.7	16	9.0	11	24	240	30	28.63		M	AA		29.71	
25	1715	0	CLR	10.00		75	24.0	50	9.7	16	9.0	11	17	230	28	28.62		M	AA		29.70	
25	1735	0	CLR	10.00		75	24.0	50	9.7	16	9.0	11	25	230	31	28.62		M	AA		29.70	
25	1755	0	CLR	9.00		73	23.0	49	9.2	16	9.0	11	18	230	26	28.62		M	AA		29.70	
25	1815	0	CLR	10.00		73	23.0	49	9.2	16	9.0	11	22	220	28	28.62		M	AA		29.70	
25	1835	0	CLR	10.00		73	23.0	49	9.2	16	9.0	11	18	230	30	28.62		M	AA		29.70	
25	1855	0	CLR	10.00		72	22.0	48	8.9	16	9.0	12	17	240	25	28.63		M	AA		29.71	
25	1915	0	CLR	10.00		72	22.0	48	8.9	16	9.0	12	17	230	25	28.63		M	AA		29.71	
25	1935	0	CLR	10.00		72	22.0	48	8.9	16	9.0	12	17	230	23	28.63		M	AA		29.71	
25	1955	0	FEW043	10.00		70	21.0	47	8.4	16	9.0	13	13	240		28.63		M	AA		29.71	
25	2015	0	FEW050 SCT060	10.00		70	21.0	46	8.0	12	11.0	10	11	240	17	28.64		M	AA		29.72	
25	2035	0	FEW046 BKN060	10.00		68	20.0	46	7.7	14	10.0	12	13	270		28.64		M	AA		29.72	
25	2055	0	FEW055	10.00		68	20.0	47	8.3	19	7.0	15	16	280	24	28.64		M	AA		29.72	
25	2115	0	FEW120	10.00		68	20.0	46	7.9	16	9.0	13	17	270	23	28.65		M	AA		29.73	
25	2135	0	FEW043 SCT120	9.00		66	19.0	46	7.6	18	8.0	16	17	270		28.65		M	AA		29.73	

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**
(final)
HOURLY OBSERVATIONS TABLE
CASA GRANDE MUNICIPAL ARPT (03914)
CASA GRANDE, AZ
(04/2016)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1462 ft. above sea level
Latitude: 32.95
Longitude: -111.766
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0015	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0035	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0055	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0115	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0135	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0155	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0215	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0235	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0255	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0315	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0335	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0355	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0415	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0435	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0455	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0515	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0535	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0555	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0615	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0635	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0655	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0715	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0735	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0755	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0815	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0835	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0855	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0915	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0935	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	0955	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	1015	0	FEW070	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	1035	0	CLR	10.00		M	M	M	M	M	M	M		M		M		M	AA		M	
25	1055	0	CLR	10.00		M	M	M	M	M	M	M	23	270	29	28.25		M	AA		29.80	
25	1115	0	CLR	10.00		75	24.0	52	11.0	27	-3.0	17	20	250	29	28.25		M	AA		29.80	
25	1135	0	CLR	10.00		77	25.0	53	11.5	27	-3.0	16	21	250	28	28.25		M	AA		29.79	
25	1155	0	CLR	10.00		79	26.0	54	12.0	27	-3.0	15	20	240	30	28.24		M	AA		29.78	
25	1215	0	CLR	10.00		79	26.0	53	11.7	25	-4.0	14	18	230	36	28.24		M	AA		29.78	
25	1235	0	CLR	10.00		81	27.0	53	11.6	21	-6.0	11	26	250	34	28.23		M	AA		29.77	
25	1255	0	CLR	10.00		79	26.0	53	11.4	23	-5.0	12	21	240	30	28.22		M	AA		29.76	
25	1315	0	CLR	10.00		79	26.0	53	11.4	23	-5.0	12	26	240	33	28.21		M	AA		29.75	
25	1335	0	CLR	10.00		79	26.0	52	11.1	21	-6.0	11	24	250	31	28.21		M	AA		29.75	
25	1355	0	CLR	10.00		81	27.0	53	11.6	21	-6.0	11	24	250	32	28.20		M	AA		29.74	
25	1415	0	CLR	10.00		81	27.0	53	11.6	21	-6.0	11	20	240	34	28.19		M	AA		29.73	
25	1435	0	CLR	7.00		M	M	M	M	M	M	M	23	260	33	28.18		M	AA		29.72	
25	1455	0	CLR	9.00		M	M	M	M	M	M	M	29	250	33	28.18		M	AA		29.72	
25	1515	0	CLR	10.00		81	27.0	53	11.6	21	-6.0	11	21	250	33	28.18		M	AA		29.72	
25	1535	0	CLR	10.00		81	27.0	53	11.4	19	-7.0	10	23	270	33	28.18		M	AA		29.72	
25	1555	0	CLR	10.00		M	M	M	M	M	M	M	26	250	33	28.17		M	AA		29.71	
25	1615	0	CLR	10.00		81	27.0	53	11.6	21	-6.0	11	25	250	33	28.17		M	AA		29.71	
25	1635	0	CLR	10.00		81	27.0	53	11.4	19	-7.0	10	23	250	33	28.17		M	AA		29.71	
25	1655	0	CLR	10.00		79	26.0	52	10.9	19	-7.0	10	21	260	31	28.17		M	AA		29.71	
25	1715	0	CLR	10.00		79	26.0	51	10.8	18	-8.0	10	21	270	31	28.17		M	AA		29.71	
25	1735	0	CLR	10.00		77	25.0	51	10.3	18	-8.0	11	21	270	28	28.17		M	AA		29.71	
25	1755	0	CLR	10.00		75	24.0	50	9.8	18	-8.0	11	22	260	29	28.17		M	AA		29.71	
25	1815	0	CLR	10.00		75	24.0	49	9.6	16	-9.0	11	20	260	29	28.17		M	AA		29.71	
25	1835	0	CLR	10.00		73	23.0	48	9.1	16	-9.0	11	17	270	21	28.17		M	AA		29.71	
25	1855	0	CLR	10.00		73	23.0	48	8.9	14	-10.0	10	17	270		28.17		M	AA		29.71	
25	1915	0	CLR	10.00		72	22.0	48	8.6	14	-10.0	11	13	280		28.18		M	AA		29.72	
25	1935	0	CLR	10.00		70	21.0	46	7.9	12	-11.0	10	6	290		28.19		M	AA		29.73	
25	1955	0	CLR	10.00		70	21.0	47	8.1	14	-10.0	11	9	290		28.19		M	AA		29.73	
25	2015	0	CLR	10.00		70	21.0	47	8.1	14	-10.0	11	9	300		28.19		M	AA		29.73	
25	2035	0	CLR	10.00		70	21.0	47	8.3	16	-9.0	13	7	310		28.20		M	AA		29.74	
25	2055	0	CLR	10.00		68	20.0	46	7.8	16	-9.0	13	8	300		28.20		M	AA		29.74	
25	2115	0	CLR	10.00		68	20.0	46	7.8	16	-9.0	13	8	290		28.21		M	AA		29.75	
25	2135	0	CLR	10.00		66	19.0	45	7.3	16	-9.0	14	6	270		28.22		M	AA		29.76	
25	2155	0	CLR	10.00		66	19.0	46	7.5	18	-8.0	16	10	280	18	28.22		M	AA		29.76	
25	2215	0	CLR	10.00		64	18.0	45	7.1	19	-7.0	18	5	280		28.22		M	AA		29.76	
25	2235	0	CLR	10.00		64	18.0	45	7.1	19	-7.0	18	11	270	16	28.23		M	AA		29.77	
25	2255	0	CLR	10.00		64	18.0	45	7.0	18	-8.0	17	8	240	16	28.24		M	AA		29.78	
25	2315	0	SCT100	10.00		64	18.0	44	6.8	16	-9.0	15	14	250	17	28.23		M	AA		29.77	
25	2335	0	BKN100	10.00		63	17.0	44	6.5	16	-9.0	16	13	250		28.24		M	AA		29.78	
25	2355	0	BKN090	10.00		63	17.0	44	6.9	19	-7.0	18	14	260		28.24		M	AA		29.78	
Dynamically generated Tue Aug 30 12:46:18 EDT 2016 via http://www.ndbc.noaa.gov/qcld/OCLCD																						

Dynamically generated Tue Aug 30 12:46:18 EDT 2016 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**
(final)
HOURLY OBSERVATIONS TABLE
CHANDLER MUNICIPAL AIRPORT (53128)
CHANDLER, AZ
(04/2016)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1243 ft. above sea level
Latitude: 33.268
Longitude: -111.812
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0547	0	CLRs	15.00	BLDU BLDU	66	19.0	54	12.1	43	6.0	43	14	170		28.43		M	AA		29.75	
25	0647	0	CLRs	10.00		68	20.0	55	12.5	43	6.0	41	17	180		28.44		M	AA		29.76	
25	0747	0	BKN250	35.00		70	21.0	55	12.5	41	5.0	35	17	220		28.47		M	AA		29.79	
25	0847	0	CLRs	10.00		73	23.0	58	14.1	45	7.0	37	16	220		28.48		M	AA		29.80	
25	0947	0	FEW030 SCT150	15.00		73	23.0	54	12.4	37	3.0	27	23	200	36	28.48		M	AA		29.80	
25	1047	0	FEW080	15.00		75	24.0	49	9.4	14	-10.0	10	21	220	34	28.47		M	AA		29.79	
25	1147	0	FEW100	15.00		77	25.0	51	10.4	18	-8.0	11	22	240	32	28.46		M	AA		29.78	
25	1347	0	FEW100	10.00		79	26.0	50	10.0	9	-13.0	7	54	220	76	28.40		M	AA		29.72	
25	1447	0	CLRs	10.00		79	26.0	50	9.7	5	-15.0	6	32s	220	40	28.40		M	AA		29.71	
25	1547	0	CLRs	7.00		79	26.0	49	9.5	1	-17.0	5				28.38		M	AA		29.69	
25	1647	0	CLRs	10.00		79	26.0	49	9.5	1	-17.0	5				28.39		M	AA		29.70	
25	1747	0	CLRs	15.00		77	25.0	49	9.2	5	-15.0	6	23	230	34	28.39		M	AA		29.70	
25	1847	0	CLRs	20.00		73	23.0	47	8.5	9	-13.0	8	23	230	34	28.39		M	AA		29.70	
25	1947	0	CLRs	15.00		72	22.0	47	8.3	0	-12.0	9	16	240	23	28.40		M	AA		29.71	
25	2047	0	CLRs	15.00		70	21.0	46	7.8	10	-12.0	10	10	240	18	28.40		M	AA		29.72	

Dynamically generated Tue Aug 30 12:48:12 EDT 2016 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**
(final)
HOURLY OBSERVATIONS TABLE
PHOENIX DEER VALLEY ARPT (03184)
PHOENIX, AZ
(04/2016)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1455 ft. above sea level
Latitude: 33.688
Longitude: -112.081
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti- meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0053	12	CLR	10.00		71	21.7	51	10.2	28	2.2	20	6	220		28.20			29.69	AA		29.75
25	0153	12	CLR	10.00		71	21.7	51	10.7	31	0.6	23	10	230		28.18			29.68	AA		29.74
25	0253	12	CLR	10.00		70	21.1	53	11.7	37	2.8	30	13	220		28.17			29.66	AA		29.73
25	0353	12	CLR	10.00		69	20.6	53	11.8	39	3.9	34	10	230		28.17			29.66	AA		29.73
25	0453	12	CLR	10.00		68	20.0	54	12.1	41	5.0	38	11	220		28.17			29.66	AA		29.73
25	0553	12	CLR	10.00		66	18.9	53	11.8	42	5.6	42	8	210		28.17			29.67	AA		29.73
25	0653	12	CLR	10.00		67	19.4	53	11.8	41	5.0	39	15	210		28.20			29.68	AA		29.75
25	0753	12	CLR	10.00		67	19.4	50	9.8	31	-0.6	26	23	220	29	28.21			29.71	AA		29.77
25	0853	12	CLR	10.00		69	20.6	51	10.3	31	0.6	24	17	210	26	28.22			29.72	AA		29.78
25	0953	12	CLR	10.00		71	21.7	51	10.4	29	1.7	21	18	240		28.21			29.71	AA		29.77
25	1053	12	CLR	10.00		73	22.8	51	10.6	27	2.8	18	20	220	30	28.20			29.70	AA		29.76
25	1153	12	CLR	10.00		74	23.3	52	10.8	27	2.8	17	20	250	32	28.20			29.68	AA		29.75
25	1253	12	CLR	10.00		77	25.0	52	10.9	23	5.0	13	20	230	31	28.16			29.65	AA		29.71
25	1353	12	FEW036	10.00		78	25.6	50	9.9	12	11.1	8	25	240	44	28.14			29.63	AA		29.69
25	1453	12	FEW039	10.00		78	25.6	50	10.1	14	10.0	9	28	220	40	28.13			29.62	AA		29.68
25	1553	12	SCT037	10.00		77	25.0	50	9.8	13	10.6	9	30	230	41	28.12			29.61	AA		29.67
25	1653	12	CLR	10.00		75	23.9	49	9.5	15	-9.4	10	29	230	38	28.13			29.62	AA		29.68
25	1753	12	CLR	10.00		73	22.8	49	9.2	17	-8.3	12	24	230	36	28.13			29.63	AA		29.68
25	1853	12	BKN047	10.00		71	21.7	48	8.6	16	-8.9	12	20	220		28.14			29.64	AA		29.69
25	1953	12	CLR	10.00		69	20.6	47	8.2	17	-8.3	14	15	220		28.15			29.65	AA		29.70
25	2053	12	CLR	10.00		68	20.0	47	8.0	18	-7.8	15	13	240		28.16			29.66	AA		29.71
25	2153	12	CLR	10.00		66	18.9	45	7.4	17	-8.3	15	7	240		28.16			29.66	AA		29.71
25	2253	12	BKN110	10.00		66	18.9	46	7.5	18	-7.8	16	14	230		28.17			29.67	AA		29.72
25	2353	12	FEW095 SCT120	10.00		65	18.3	47	8.1	24	-4.4	21	14	270		28.17			29.68	AA		29.73

Dynamically generated Tue Aug 30 12:52:58 EDT 2016 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA**

(final)

**HOURLY OBSERVATIONS TABLE
FALCON FIELD AIRPORT (03185)**

MESA, AZ

(04/2016)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1380 ft. above sea level

Latitude: 33.466

Longitude: -111.733

Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 8-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti- meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0548	0	BKN250	40.00		M	M	M	M	M	M	M	11	160		28.25			M	AA		29.72
25	0653	0	BKN250	40.00		M	M	M	M	M	M	M	11	180		28.27			M	AA		29.74
25	0747	0	BKN250	40.00		M	M	M	M	M	M	M	17	200	23	28.29			M	AA		29.76
25	0847	0	BKN250	40.00		M	M	M	M	M	M	M	17	210	23	28.29			M	AA		29.76
25	0947	0	FEW060 SCT150	40.00		M	M	M	M	M	M	M	23	210	29	28.30			M	AA		29.77
25	1050	0	FEW060	40.00		M	M	M	M	M	M	M	23	220	29	28.28			M	AA		29.75
25	1253	0	FEW060	40.00		M	M	M	M	M	M	M	22	200	30	28.25			M	AA		29.72
25	1352	0	FEW060	40.00		M	M	M	M	M	M	M	17	180	33	28.22			M	AA		29.69
25	1454	0	FEW060	40.00		M	M	M	M	M	M	M	17	240	40	28.20			M	AA		29.67
25	1547	0	FEW060	40.00		M	M	M	M	M	M	M	23	240	40	28.19			M	AA		29.66
25	1647	0	FEW060	20.00		M	M	M	M	M	M	M	17	230	40	28.20			M	AA		29.67
25	1747	0	CLRs	20.00		M	M	M	M	M	M	M	17	230	29	28.21			M	AA		29.68
25	1847	0	CLRs	20.00		M	M	M	M	M	M	M	17	240	28	28.21			M	AA		29.68
25	1947	0	CLRs	20.00		M	M	M	M	M	M	M	9	240	17	28.23			M	AA		29.70

Dynamically generated Tue Aug 30 12:52:01 EDT 2016 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
GLENDALE MUNICIPAL AIRPORT (53126)
GLENDALE, AZ
(04/2016)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1066 ft. above sea level
Latitude: 33.527
Longitude: -112.295
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tendency	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0547	0	BKN200	20.00		68	20.0	57	13.8	48	9.0	49	8	190		28.62		M	AA		29.75	
25	0650	0	BKN200	20.00		68	20.0	51	10.6	34	1.0	29	15	180	26	28.63		M	AA		29.76	
25	0747	0	SCT200	20.00		70	21.0	52	11.1	34	1.0	27	11	190		28.66		M	AA		29.79	
25	0855	0	FEW100 SCT200	20.00		70	21.0	51	10.8	32	0.0	25	14	180	21	28.67		M	AA		29.80	
25	0950	0	FEW100 FEW200	20.00		72	22.0	52	11.2	32	0.0	23	15	210	22	28.66		M	AA		29.79	
25	1048	0	FEW100	10.00		73	23.0	52	10.8	28	-2.0	19	23	210	30	28.65		M	AA		29.78	
25	1148	0	FEW100	10.00		75	24.0	52	11.3	28	-2.0	18	17	170	29	28.63		M	AA		29.76	
25	1249	0	FEW100	10.00		81	27.0	51	10.5	9	-13.0	6	25	180	39	28.59		M	AA		29.72	
25	1350	0	FEW100	10.00		81	27.0	51	10.5	9	-13.0	6	26	200	37	28.58		M	AA		29.71	
25	1447	0	FEW100	10.00		79	26.0	51	10.3	12	-11.0	8	25	190	36	28.58		M	AA		29.71	
25	1547	0	FEW100	10.00		79	26.0	50	10.1	10	-12.0	7	30	210	38	28.56		M	AA		29.69	
25	1652	0	FEW100	10.00		77	25.0	50	10.0	14	-10.0	9	28	200	39	28.56		M	AA		29.69	
25	1747	0	FEW100	10.00		75	24.0	49	9.5	14	-10.0	10	16	190	28	28.57		M	AA		29.70	
25	1847	0	FEW100	10.00		73	23.0	49	9.2	16	-9.0	11	21	200	29	28.57		M	AA		29.70	
25	1947	0	FEW100	10.00		72	22.0	49	9.1	18	-8.0	13	15	200	22	28.58		M	AA		29.71	

Dynamically generated Tue Aug 30 12:49:31 EDT 2016 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
PHOENIX GOODYEAR AIRPORT (03186)
GOODYEAR, AZ
(04/2016)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 968 ft. above sea level
Latitude: 33.416
Longitude: -112.383
Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humid %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti- meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0547	0	BKN140 BKN250	10.00		66	19.0	56	13.3	48	9.0	52	7	250		28.71		M	AA		29.74	
25	0647	0	SCT140 BKN200 BKN250	10.00		66	19.0	50	10.2	34	1.0	31	9	230	17	28.73		M	AA		29.76	
25	0747	0	FEW140 SCT200 BKN250	10.00		70	21.0	52	11.1	34	1.0	27	20	230		28.75		M	AA		29.78	
25	0847	0	FEW080 SCT200 SCT250	10.00		72	22.0	52	10.9	30	-1.0	21	16	220	25	28.75		M	AA		29.78	
25	0947	0	FEW080 FEW200	10.00		73	23.0	52	11.1	30	-1.0	20	15	210	23	28.76		M	AA		29.79	
25	1047	0	FEW080	10.00		73	23.0	52	11.1	30	-1.0	20	10	220	18	28.75		M	AA		29.78	
25	1147	0	FEW080	10.00		77	25.0	53	11.6	27	-3.0	16	11	230	25	28.74		M	AA		29.77	
25	1247	0	SCT080	10.00		81	27.0	52	10.8	12	-11.0	7	21	220	32	28.69		M	AA		29.72	
25	1347	0	FEW100	10.00		82	28.0	52	11.2	14	-10.0	8	17	220	29	28.68		M	AA		29.71	
25	1447	0	FEW100	10.00		81	27.0	51	10.6	10	-12.0	7	17	240	34	28.67		M	AA		29.70	
25	1547	0	FEW120	10.00		79	26.0	50	10.1	10	-12.0	7	17	230	34	28.65		M	AA		29.68	
25	1647	0	FEW120	10.00		79	26.0	51	10.7	16	-9.0	9	14	240	29	28.66		M	AA		29.69	
25	1747	0	FEW120	10.00		75	24.0	50	10.0	19	-7.0	12	14	230	29	28.67		M	AA		29.70	
25	1847	0	FEW120	10.00		73	23.0	49	9.5	19	-7.0	13	11	240	23	28.67		M	AA		29.70	
25	1947	0	FEW120	10.00		72	22.0	49	9.3	19	-7.0	13	11	240		28.68		M	AA		29.71	
25	2047	0	FEW100	10.00		68	20.0	48	8.8	23	-5.0	18	7	260		28.69		M	AA		29.72	

Dynamically generated Tue Aug 30 12:51:05 EDT 2016 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

QUALITY CONTROLLED LOCAL CLIMATOLOGICAL DATA

(final)

HOURLY OBSERVATIONS TABLE

LUKE AFB AIRPORT (23111)

GLENDAL, AZ

(04/2016)

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1085 ft. above sea level

Latitude: 33.55

Longitude: -112.366

Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Altitude (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0058	0	CLR	10.00	HZ	73	22.7	52	11.3	31	-0.5	21	6	190		28.58			29.70	AA		29.73
25	0158	0	CLR	10.00		72	22.1	55	13.0	41	5.2	33	7	200		28.57			29.69	AA		29.72
25	0258	0	CLR	10.00		70	21.0	56	13.2	44	6.9	39	8	220		28.56			29.67	AA		29.71
25	0358	0	CLR	10.00		70	20.9	57	14.0	47	8.4	44	11	190		28.56			29.67	AA		29.71
25	0458	0	CLR	10.00		68	20.2	57	14.0	49	9.2	51	11	210		28.56			29.67	AA		29.71
25	0558	0	CLR	10.00		67	19.2	57	13.8	49	9.2	53	9	190		28.57			29.69	AA		29.72
25	0658	0	CLR	10.00		66	18.7	52	11.2	39	3.9	37	14	210		28.59			29.71	AA		29.74
25	0758	0	CLR	10.00		68	19.8	52	11.2	37	2.5	32	15	220		28.62			29.74	AA		29.77
25	0858	0	CLR	10.00		70	21.0	52	11.3	35	1.5	28	24	220		28.61			29.73	AA		29.76
25	0958	0	CLR	10.00		71	21.9	53	11.5	35	1.7	27	18	230		28.61			29.73	AA		29.76
25	1058	0	CLR	10.00		73	23.0	52	11.3	31	-0.6	21	23	220		28.60			29.72	AA	T	29.75
25	1158	0	CLR	10.00		76	24.5	52	11.0	25	-3.7	15	26	230	38	28.58			29.70	AA	T	29.73
25	1258	0	CLR	5.00		79	26.0	50	10.0	9	-12.9s	7	28	230	41	28.55			29.67	AA		29.70
25	1358	0	CLR	8.00		79	26.1	50	10.1	10	-12.2s	7	31	210	40	28.53			29.65	AA		29.68
25	1458	0	CLR	10.00		79	26.2	51	10.4	13	-10.4	8	28	240	36	28.52			29.64	AA		29.67
25	1558	0	CLR	9.00		78	25.7	50	10.1	13	-10.7	8	30	220	41	28.51			29.63	AA		29.66
25	1658	0	CLR	10.00		77	25.0	51	10.3	17	-8.4	10	26	220	36	28.52			29.64	AA		29.67
25	1758	0	CLR	10.00		75	24.1	50	9.9	18	-7.9	11	25	220	32	28.52			29.64	AA		29.67
25	1858	0	CLR	10.00		73	22.9	49	9.5	19	-7.5	13	18	220	25	28.53			29.65	AA		29.68
25	1958	0	CLR	10.00		71	21.4	49	9.3	21	-6.1	15	13	230		28.54			29.66	AA	T	29.69
25	2058	0	CLR	10.00		70	21.0	47	8.5	17	-8.2	13	11	270		28.54			29.66	AA	T	29.69
25	2158	0	SCT130	10.00		69	20.4	48	8.8	21	-6.1	16	10	210		28.56			29.68	AA	T	29.71
25	2225	0	BKN120	10.00		66	19.0	47	8.3	23	-5.0	19	14	250		28.57			M	AA		29.72
25	2258	0	FEW120	10.00		67	19.5	49	9.5	29	-1.9	24	14	280		28.58			29.70	AA		29.73
25	2358	0	CLR	10.00		64	18.0	48	9.1	31	-0.6	29	7	260		28.60			29.72	AA		29.75

Dynamically generated Tue Aug 30 12:50:19 EDT 2016 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)
HOURLY OBSERVATIONS TABLE
PHOENIX SKY HARBOR INTL AIRPORT (23183)
PHOENIX, AZ
(04/2016)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

Elevation: 1107 ft. above sea level
Latitude: 33.427
Longitude: -112.003
Data Version: VER3

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti- meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0051	11	FEW250	10.00		75	23.9	53	11.4	29	-1.7	18	7	140		28.56			29.68	AA		29.73
25	0151	11	BKN250	10.00		74	23.3	53	11.9	33	0.6	22	6	200		28.55			29.67	AA		29.72
25	0251	11	BKN250	10.00		73	22.8	54	12.2	36	2.2	26	5	170		28.55			29.67	AA		29.72
25	0351	11	BKN250	10.00		73	22.8	55	12.6	38	3.3	28	7	270		28.55			29.67	AA		29.72
25	0451	11	BKN250	10.00		72	22.2	55	12.8	40	4.4	31	3	250		28.55			29.67	AA		29.72
25	0551	11	SCT140 BKN250	10.00		71	21.7	55	12.6	40	4.4	33	7	270		28.55			29.67	AA		29.72
25	0651	11	FEW140 SCT220 BKN250	10.00		71	21.7	53	11.5	35	1.7	27	7	210		28.58			29.70	AA		29.75
25	0751	11	FEW090 BKN250	10.00		71	21.7	52	11.0	32	0.0	24	16	230		28.60			29.72	AA		29.77
25	0851	11	FEW100 SCT250	10.00		74	23.3	52	11.2	29	-1.7	19	20	240	33	28.59			29.71	AA		29.76
25	0951	11	FEW100 FEW250	10.00		75	23.9	53	11.7	31	-0.6	20	20	230	30	28.60			29.72	AA		29.77
25	1051	11	FEW120	10.00		76	24.4	51	10.3	19	-7.2	12	17	250	28	28.60			29.72	AA		29.77
25	1151	11	FEW120	10.00		77	25.0	51	10.5	19	-7.2	11	24	230	36	28.57			29.70	AA		29.74
25	1251	11	FEW120	10.00		78	25.6	51	10.3	15	-9.4	9	25	230	38	28.54			29.67	AA		29.71
25	1351	11	FEW120	10.00		80	26.7	50	9.8	2	-16.7	5	25	230	41	28.52			29.65	AA		29.69
25	1451	11	FEW120	10.00		80	26.7	50	10.0	5	-15.0	5	23	250	34	28.52			29.64	AA		29.69
25	1551	11	FEW120	10.00		79	26.1	49	9.6	2	-16.7	5	21	250	37	28.50			29.62	AA		29.67
25	1651	11	FEW120	10.00		77	25.0	49	9.3	6	-14.4	6	25	240	37	28.51			29.63	AA		29.68
25	1751	11	FEW120	10.00		76	24.4	49	9.3	10	-12.2	8	20	240	33	28.51			29.64	AA		29.68
25	1851	11	FEW120	10.00		74	23.3	48	8.8	10	-12.2	8	16	260	31	28.51			29.64	AA		29.68
25	1951	11	FEW120	10.00		73	22.8	48	9.0	14	-10.0	10	15	260		28.53			29.65	AA		29.70
25	2051	11	CLR	10.00		71	21.7	48	8.7	16	-8.9	12	10	250		28.53			29.66	AA		29.70
25	2151	11	CLR	10.00		69	20.6	47	8.1	16	-8.9	13	10	260		28.54			29.67	AA		29.71
25	2251	11	BKN150	10.00		68	20.0	46	7.7	14	-10.0	12	17	250	26	28.55			29.67	AA		29.72
25	2351	11	FEW120 BKN150	10.00		67	19.4	47	8.1	20	-6.7	17	17	260		28.56			29.68	AA		29.73
Dynamically generated Tue Aug 30 12:54:45 EDT 2016 via http://www.ndbc.noaa.gov/qcld/QCLCD																						

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

**HOURLY OBSERVATIONS TABLE
SCOTTSDALE AIRPORT (03192)
SCOTTSDALE, AZ
(04/2016)**

Elevation: 1473 ft. above sea level

Latitude: 33.622

Longitude: -111.910

Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humid %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0053	12	CLR	10.00		75	23.9	52	11.2	28	-2.2	18	8	240		28.18			29.70	AA		29.77
25	0153	12	CLR	10.00		73	22.8	52	11.2	31	-0.6	21	6	230		28.17			29.69	AA		29.76
25	0253	12	CLR	10.00		71	21.7	51	10.7	31	-0.6	23	3	200		28.16			29.69	AA		29.75
25	0353	12	CLR	10.00		69	20.6	51	10.3	31	-0.6	24	3	270		28.16			29.68	AA		29.75
25	0453	12	CLR	10.00		68	20.0	51	10.8	35	1.7	30	3	VR		28.15			29.68	AA		29.74
25	0553	12	CLR	10.00		68	20.0	53	11.8	40	4.4	36	3	140		28.16			29.69	AA		29.75
25	0653	12	CLR	10.00		69	20.6	53	11.8	39	3.9	34	8	210		28.18			29.70	AA		29.77
25	0753	12	CLR	10.00		69	20.6	50	9.9	29	-1.7	22	15	230		28.20			29.73	AA		29.79
25	0853	12	CLR	10.00		71	21.7	49	9.6	24	-4.4	17	16	250	28	28.20			29.73	AA		29.79
25	0953	12	CLR	10.00		72	22.2	50	10.2	26	-3.3	18	15	200		28.20			29.73	AA		29.79
25	1053	12	CLR	10.00		74	23.3	50	9.9	21	-6.1	14	15	210	28	28.19			29.72	AA		29.78
25	1153	12	CLR	10.00		75	23.9	50	9.8	18	-7.8	11	20	240	34	28.18			29.70	AA		29.77
25	1253	12	CLR	10.00		76	24.4	50	9.9	17	-8.3	11	20	220	29	28.15			29.68	AA		29.74
25	1353	12	CLR	10.00		78	25.6	48	9.1	-1	-18.3	4	22	240	36	28.13			29.66	AA		29.72
25	1453	12	CLR	10.00		77	25.0	48	8.9	-0	-17.8	5	20	220	36	28.11			29.64	AA		29.70
25	1553	12	FEW044	10.00		77	25.0	48	9.1	4	-15.6	6	20	230	37	28.10			29.63	AA		29.69
25	1653	12	CLR	10.00		75	23.9	48	8.6	5	-15.0	6	21	260	31	28.12			29.65	AA		29.71
25	1753	12	CLR	10.00		74	23.3	48	8.7	9	-12.8	8	20	240	25	28.12			29.65	AA		29.71
25	1853	12	CLR	10.00		72	22.2	47	8.3	11	-11.7	9	11	240	22	28.12			29.65	AA		29.71
25	1953	12	CLR	10.00		71	21.7	47	8.2	12	-11.1	10	11	250		28.14			29.67	AA		29.73
25	2053	12	CLR	10.00		70	21.1	47	8.1	14	-10.0	11	11	250		28.15			29.68	AA		29.74
25	2153	12	CLR	10.00		68	20.0	46	7.5	13	-10.6	12	6	240		28.15			29.68	AA		29.74
25	2253	12	FEW120	10.00		68	20.0	46	7.8	16	-8.9	13	11	240	18	28.15			29.68	AA		29.74
25	2353	12	FEW090 SCT110	10.00		66	18.9	46	7.9	21	6.1	18	11	260	22	28.15			29.69	AA		29.74

Dynamically generated Tue Aug 30 12:55:35 EDT 2016 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>

U.S. Department of Commerce
National Oceanic & Atmospheric Administration

**QUALITY CONTROLLED LOCAL
CLIMATOLOGICAL DATA
(final)**

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801

**HOURLY OBSERVATIONS TABLE
WILLIAMS GATEWAY AIRPORT (23104)
PHOENIX, AZ
(04/2016)**

Elevation: 1382 ft. above sea level

Latitude: 33.3

Longitude: -111.666

Data Version: VER2

Date	Time (LST)	Station Type	Sky Conditions	Visibility (SM)	Weather Type	Dry Bulb Temp		Wet Bulb Temp		Dew Point Temp		Rel Humd %	Wind Speed (MPH)	Wind Dir	Wind Gusts (MPH)	Station Pressure (in. hg)	Press Tend	Net 3-hr Chg (mb)	Sea Level Pressure (in. hg)	Report Type	Precip. Total (in)	Alti-meter (in. hg)
						(F)	(C)	(F)	(C)	(F)	(C)											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
25	0015	0	CLR	10.00	BLDU	70	21.0	51	10.4	30	-1.0	23	9	200		28.32		M	AA		29.78	
25	0035	0	CLR	10.00		68	20.0	50	9.9	30	-1.0	24	6	170		28.32		M	AA		29.78	
25	0055	0	CLR	10.00		70	21.0	51	10.7	32	0.0	25	8	200		28.31		M	AA		29.77	
25	0115	0	CLR	10.00		70	21.0	52	11.1	34	1.0	27	7	190		28.31		M	AA		29.77	
25	0135	0	CLR	10.00		64	18.0	49	9.6	34	1.0	33	8	180		28.30		M	AA		29.76	
25	0155	0	CLR	10.00		70	21.0	52	11.1	34	1.0	27	10	190		28.30		M	AA		29.76	
25	0215	0	CLR	10.00		70	21.0	52	11.1	34	1.0	27	10	190		28.29		M	AA		29.75	
25	0235	0	CLR	10.00		70	21.0	52	11.1	34	1.0	27	8	190		28.29		M	AA		29.75	
25	0255	0	CLR	10.00		66	19.0	50	10.1	34	1.0	31	6	170		28.29		M	AA		29.75	
25	0315	0	CLR	10.00		68	20.0	51	10.6	34	1.0	29	6	200		28.29		M	AA		29.75	
25	0335	0	CLR	10.00		68	20.0	52	11.0	36	2.0	31	7	190		28.29		M	AA		29.75	
25	0355	0	CLR	10.00		64	18.0	50	10.0	36	2.0	36	7	160		28.29		M	AA		29.75	
25	0415	0	CLR	10.00		64	18.0	51	10.2	37	3.0	37	8	200		28.29		M	AA		29.75	
25	0435	0	CLR	10.00		68	20.0	54	12.1	41	5.0	38	7	220		28.30		M	AA		29.76	
25	0453	0	SCT200	20.00		64	18.0	52	11.1	41	5.0	43	6	170		28.30		M	AA		29.76	
25	0553	0	BKN150	30.00		63	17.0	51	10.4	39	4.0	41	7	150		28.30		M	AA		29.76	
25	0647	0	SCT250	45.00		66	19.0	54	12.1	43	6.0	43	6	180		28.32		M	AA		29.78	
25	0747	0	FEW150 SCT200	45.00		70	21.0	55	13.0	43	6.0	38	9	220	15s	28.34		M	AA		29.80	
25	0847	0	SCT250	45.00		72	22.0	56	13.4	43	6.0	35	6	270	16	28.34		M	AA		29.80	
25	0947	0	FEW120 SCT250	45.00		72	22.0	56	13.4	43	6.0	35	13	230	25	28.35		M	AA		29.81	
25	1047	0	FEW120 SCT250	30.00		75	24.0	51	10.8	25	-4.0	15	20	250	25	28.34		M	AA		29.80	
25	1147	0	FEW120	20.00		75	24.0	50	9.8	18	-8.0	11	24	250	34	28.32		M	AA		29.78	
25	1247	0	SCT200	10.00		77	25.0	51	10.4	19	-7.0	11	31	240	38	28.30		M	AA		29.76	
25	1347	0	SCT200	10.00	79	26.0	51	10.4	14	10.0	8	18	270	33	28.29		M	AA		29.75		
25	1447	0	FEW050	5.00	79	26.0	50	10.0	9	-13.0	7	23	250	37	28.27		M	AA		29.73		
25	1547	0	CLRs	10.00	79	26.0	50	9.8	7	-14.0	6	26	250	38	28.25		M	AA		29.71		
25	1653	0	CLRs	20.00	77	25.0	48	9.1	3	-16.0	5	49	250	63	28.25		M	AA		29.71		
25	1747	0	CLRs	30.00	75	24.0	48	8.8	7	-14.0	7	20	260	29	28.25		M	AA		29.71		
25	1848	0	CLRs	20.00	73	23.0	47	8.4	9	-13.0	8	36	270		28.25		M	AA		29.71		
25	1950	0	CLRs	20.00	70	21.0	46	7.9	12	11.0	10	8	270		28.27		M	AA		29.73		
25	2047	0	CLRs	20.00	70	21.0	47	8.1	14	10.0	11	9	290		28.27		M	AA		29.73		
25	2147	0	CLRs	20.00	66	19.0	45	7.1	14	10.0	13	7	260		28.28		M	AA		29.74		
25	2250	0	CLRs	20.00	61	16.0	44	6.3	19	-7.0	20	7	230		28.28		M	AA		29.74		
25	2347	0	SCT250	20.00	63	17.0	44	6.9	19	-7.0	18	9	240		28.30		M	AA		29.76		

Dynamically generated Tue Aug 30 12:53:57 EDT 2016 via <http://www.ncdc.noaa.gov/qclcd/QCLCD>

NWS SRRS PRODUCTS FOR:
20160425

FXUS65 KPSR 251546

AFDPSR

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE PHOENIX AZ

846 AM MST MON APR 25 2016

.SYNOPSIS...

SEVERAL WEATHER DISTURBANCES WILL PASS THROUGH THE REGION THIS WEEK BRINGING OCCASIONALLY STRONGER WIND GUSTS...COOLER THAN NORMAL TEMPERATURES...AND A REMOTE CHANCE OF AN ISOLATED SHOWER. THE FIRST SYSTEM WILL MOVE INTO THE AREA TODAY WITH STRONG WINDS AND SOME BLOWING DUST. THE NEXT AREA OF LOW PRESSURE WILL AFFECT THE REGION THURSDAY WITH MORE BREEZY CONDITIONS AND AN OUTSIDE CHANCE OF SHOWERS AND THUNDERSTORMS OVER HIGHER TERRAIN NORTH AND EAST OF PHOENIX. THE FINAL DISTURBANCE WILL ROTATE TOWARDS THE REGION BY THE END OF THE WEEKEND.

&&

.DISCUSSION...

WINDY AND DRY CONDITIONS WILL BE THE WEATHER FOCUS TODAY AND GUSTY SOUTHWEST WINDS HAVE ALREADY DEVELOPED ACROSS MUCH OF THE REGION...WITH IN THE 20 TO 25 KT RANGE /23 TO 28 MPH/ OCCURRING ACROSS THE PHOENIX AREA AND ACROSS IMPERIAL COUNTY CA. STRONGER WINDS UPSTREAM ARE GENERATING SOME DUST RELATED IMPACTS...PARTICULARLY FOR TWENTYNINE PALMS WHERE VSBYS HAVE TRENDED DOWN TO 2 SM IN HAZE AND DUST. WITH THE WINDS JUST STARTING TO PICK UP ACROSS MUCH OF OUR FORECAST AREA THIS AM...HAVE YET TO RECEIVE ANY REPORTS OF DUST OR VSBY IMPACTS YET.

12Z RAOB ANALYSIS PLOTS THE 500MB LOW CIRC CENTER OVER SOUTHERN NV WITH UPSTREAM 500MB TEMPS -25 TO -26 C. INITIAL PV BAND/FRONTAL INTRUSION HAS WEAKENED AS IT CUTS ACROSS AZ WITH THE BAJA SPINE CIRRUS BLOW OFF NOW DISSIPATING AS THE BAND AND LIFT AREA BECOMES REMOVED FROM THE TERRAIN AND FURTHER INLAND. A SECONDARY VORT LOBE IS CUTTING THROUGH THE CA CENTRAL VALLEY RAPIDLY. TRAJECTORY OF THIS SECONDARY LOBE CUTS IT OVER PORTIONS OF THE CA COAST...POTENTIALLY DRAWING IN AND TRANSPORTING SOME MARINE MOISTURE UP THROUGH INTO THE ML ATMO LAYERS BY THE AFTN. LATEST HI-RES GUIDANCE AND OVERNIGHT DETERMINISTIC MODEL RUNS POINT TO SOME LIGHT SHOWER/QPF ACTIVITY IN A BROAD LINE FROM JTNP THROUGH PARKER AZ AND INTO PORTIONS OF WEST-CENTRAL AZ THIS AFTERNOON AND EVENING. NUDGED UP POPS TO VERY LOW END SLIGHT CHANCE PERCENTAGES THROUGH THOSE AREAS PARTICULARLY THIS AFTERNOON AND EARLY EVENING. BELOW AVERAGE TEMPERATURES /WHICH IS 88F IN PHOENIX AND 89F IN YUMA/ ARE FORECAST REGIONWIDE...SOLID UPPER 70S TO LOW 80S FOR MOST IN THE LOWER DESERT ELEVATIONS AND UPPER 60S FOR THE FOOTHILLS AND HIGH TERRAIN AREAS. UPDATES TO SKY TRENDS AND POPS/WX FOR TODAY TO MATCH CURRENT GUIDANCE. FIRE WEATHER AND WIND HEADLINES REMAIN IN EFFECT OR WILL START THROUGHOUT THE DAY.

&&

.AVIATION...

SOUTH-CENTRAL ARIZONA INCLUDING KPHX...KIWA AND KSDL... A STRONG DRY COLD FRONT WILL MOVE THROUGH THE AREA EARLY TODAY BRINGING STRONG GUSTY SOUTHWEST WINDS TO THE REGION. SOUTHWEST WINDS WILL INCREASE BY LATE MORNING BECOMING GUSTY DURING THE AFTERNOON AT

25 TO 35 KNOTS. SOME LOFTED BLOWING DUST MAY BE GENERATED...BUT AT THIS POINT NOT EXPECTED TO POSE MUCH OF AN IMPACT TO AREA TERMINALS. GRADUAL DIMINISHING OF WINDS BY MIDNIGHT WITH WIND DIRECTIONS LIKELY REMAINING OUT OF THE WEST THROUGH MUCH OF TONIGHT. SOUTHEAST CALIFORNIA/SOUTHWEST ARIZONA INCLUDING KIPL AND KBLH... STRONG SOUTHWEST WINDS WILL OCCUR THROUGH MUCH OF TODAY PEAKING IN INTENSITY LATE THIS AFTERNOON. WIND GUSTS OF 40 KTS ARE LIKELY FOR KIPL WITH SLIGHTLY LOWER SPEEDS AT KBLH. AREAS OF BLOWING DUST AND SAND MAY RESTRICT VSBYS TO UNDER 2 MILES AT TIMES...ESPECIALLY THIS AFTERNOON. WINDS WILL GRADUALLY DIMINISH AFTER MIDNIGHT. AVIATION DISCUSSION NOT UPDATED FOR AMENDED TAFS.
&&

.FIRE WEATHER...
WEDNESDAY THROUGH SUNDAY...
ANOTHER STRONG PACIFIC LOW PRESSURE SYSTEM WILL BRING WELL BELOW NORMAL TEMPERATURES TO THE REGION FROM WEDNESDAY INTO FRIDAY ALONG WITH GUSTY WINDS AND EVEN A SLIGHT CHANCE FOR SHOWERS. HOWEVER...ELEVATED HUMIDITIES DURING THIS PERIOD WILL LIKELY KEEP FIRE DANGER LEVELS BELOW CRITICAL THRESHOLDS. DRY CONDITIONS AND SOMEWHAT WARMER TEMPERATURES WILL RETURN SATURDAY AND SUNDAY AS HIGH PRESSURE ATTEMPTS TO REBUILD OVER THE REGION FROM THE WEST...BUT WITH AFTERNOON BREEZES REMAINING A BIT STRONGER THAN NORMAL AS WINDS ALOFT REMAIN AT ELEVATED LEVELS.
&&

.SPOTTER INFORMATION STATEMENT...
SPOTTER ACTIVATION IS NOT EXPECTED.
&&

.PSR WATCHES/WARNINGS/ADVISORIES...
AZ...RED FLAG WARNING FROM 1 PM THIS AFTERNOON TO 8 PM MST THIS EVENING FOR AZZ131>133.
WIND ADVISORY FROM 1 PM THIS AFTERNOON TO 10 PM MST THIS EVENING FOR AZZ020>028.
CA...RED FLAG WARNING FROM 1 PM THIS AFTERNOON TO 8 PM PDT THIS EVENING FOR CAZ231.
WIND ADVISORY FROM 1 PM THIS AFTERNOON TO 10 PM PDT THIS EVENING FOR CAZ031-032.
WIND ADVISORY UNTIL 10 PM PDT THIS EVENING FOR CAZ030-033.

&&

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VISIT US ON FACEBOOK...TWITTER...AND AT WEATHER.GOV/PHOENIX
DISCUSSION...NOLTE
PREVIOUS DISCUSSION...MO
AVIATION...KUHLMAN
FIRE WEATHER...PERCHA

WWUS85 KPSR 251911

AWWPHX

AZZ023-252115-

AIRPORT WEATHER WARNING FOR SKY HARBOR AIRPORT

NATIONAL WEATHER SERVICE PHOENIX AZ

1211 PM MST MON APR 25 2016

...AIRPORT WEATHER WARNING FOR SKY HARBOR AIRPORT IN EFFECT UNTIL 315 PM MST...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS ISSUED AN AIRPORT WEATHER WARNING FOR SKY HARBOR AIRPORT FOR STRONG GUSTY WINDS.

STRONG GUSTY WEST WINDS WILL CONTINUE THROUGHOUT THIS AFTERNOON...AND INTO THE EARLY EVENING. GUSTS WILL RANGE 40 TO 45 MPH AT TIMES...BEGINNING TO DIMINISH AFTER 6 PM MST.
\$\$

WWUS75 KPSR 252013

NPWPSR

URGENT - WEATHER MESSAGE

NATIONAL WEATHER SERVICE PHOENIX AZ

113 PM MST MON APR 25 2016

.A COLD FRONT WILL SWEEP ACROSS SOUTHERN CALIFORNIA AND ARIZONA

TODAY LEADING TO STRONG WINDS AND AREAS OF BLOWING DUST.

AZZ020-025>028-CAZ031-033-260500-

/O.NEW.KPSR.DU.Y.0006.160425T2013Z-160426T0500Z/

/O.CON.KPSR.WI.Y.0008.000000T0000Z-160426T0500Z/

LOWER COLORADO RIVER VALLEY AZ-YUMA/MARTINEZ LAKE AND VICINITY-

SOUTHWEST DESERTS-SOUTHWEST MARICOPA COUNTY-

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-

LOWER COLORADO RIVER VALLEY CA-IMPERIAL COUNTY-

INCLUDING THE CITIES OF...EHRENBERG...PARKER...

FORTUNA FOOTHILLS...SAN LUIS...SOMERTON...YUMA...DATELAND...

TACNA...WELLTON...GILA BEND...APACHE JUNCTION...CASA GRANDE...

COOLIDGE...FLORENCE...BLYTHE...BRAWLEY...CALEXICO...EL CENTRO...

GLAMIS...IMPERIAL...THE SALTON SEA

113 PM MST MON APR 25 2016 /113 PM PDT MON APR 25 2016/

...BLOWING DUST ADVISORY IN EFFECT UNTIL 10 PM MST /10 PM PDT/

THIS EVENING...

...WIND ADVISORY REMAINS IN EFFECT UNTIL 10 PM MST /10 PM PDT/

THIS EVENING...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS ISSUED A BLOWING DUST

ADVISORY...WHICH IS IN EFFECT UNTIL 10 PM MST /10 PM PDT/ THIS

EVENING.

* AFFECTED AREA...THE LOWER DESERTS OF SOUTH-CENTRAL AND SOUTHWEST ARIZONA AND SOUTHEAST CALIFORNIA. THIS INCLUDES GILA BEND...CASA GRANDE...MARICOPA...COOLIDGE...YUMA...TACNA...EL CENTRO...IMPERIAL AND INTERSTATES 10...8 AND LOCAL HIGHWAYS THROUGH THESE AREAS INCLUDING AZ 347...AZ 85...U.S. HIGHWAY 95 AND CA 78.

* TIMING...THIS AFTERNOON AND EVENING.

* WINDS...WESTERLY AT 20 TO 30 MPH WITH GUSTS OF 40 TO 45 MPH.

* VISIBILITY...DOWN BELOW 1 MILE AT TIMES WITH LOCALIZED DUST CHANNELS/STREAMS AND FOR BRIEF PERIODS. BROADER REGIONAL VISIBILITY DEGRADATION TO PERSIST INTO THE AFTERNOON AND EVENING HOURS.

* IMPACTS...HAZARDOUS DRIVING CONDITIONS DUE TO AREAS OF REDUCED VISIBILITY IN BLOWING DUST AS WELL AS STRONG CROSS WINDS ON NORTH-SOUTH ORIENTED ROADWAYS. AFFECTED ROADWAYS INCLUDE INTERSTATE 8...INTERSTATE 10...AND HIGHWAY 347.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT...ESPECIALLY FOR HIGH PROFILE VEHICLES. IN ADDITION...STRONG WINDS OVER DESERT AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA CAUTION.

BE READY FOR A SUDDEN DROP IN VISIBILITY. IF YOU ENCOUNTER BLOWING DUST OR BLOWING SAND ON THE ROADWAY OR SEE IT APPROACHING...PULL OFF THE ROAD AS FAR AS POSSIBLE AND PUT YOUR VEHICLE IN PARK. TURN THE LIGHTS ALL THE WAY OFF AND KEEP YOUR FOOT OFF THE BRAKE PEDAL.

REMEMBER...PULL ASIDE...STAY ALIVE.

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AZZ021>024-CAZ030-032-260500-
/O.CON.KPSR.WI.Y.0008.000000T0000Z-160426T0500Z/
WEST CENTRAL DESERTS-NORTHWEST MARICOPA COUNTY-
GREATER PHOENIX AREA-
SOUTHERN GILA COUNTY/TONTO NATIONAL FOREST FOOTHILLS-
JOSHUA TREE NATIONAL PARK-RIVERSIDE COUNTY/EASTERN DESERTS-
INCLUDING THE CITIES OF...BOUSE...QUARTZSITE...SALOME...BUCKEYE...
LAKE PLEASANT...MORRISTOWN...NEW RIVER...TONOPAH...WICKENBURG...
CAREFREE...CAVE CREEK...CHANDLER...FOUNTAIN HILLS...GILBERT...
GLENDALE...MESA...PEORIA...PHOENIX...SCOTTSDALE...SUN CITY...
TEMPE...GLOBE...MIAMI...SAN CARLOS...SUPERIOR...
TOP-OF-THE-WORLD...ALSO INCLUDING APACHE...BARTLETT...CANYON...
HORSESHOE...ROOSEVELT...AND SAGUARO LAKES...
COTTONWOOD VISITOR CENTER...KEYS VIEW...LOST HORSE...
CHIRIACO SUMMIT...DESERT CENTER...EAGLE MOUNTAIN

113 PM MST MON APR 25 2016 /113 PM PDT MON APR 25 2016/

...WIND ADVISORY REMAINS IN EFFECT UNTIL 10 PM MST /10 PM PDT/
THIS EVENING...

* AFFECTED AREA...THE LOWER DESERTS AND HIGHER TERRAIN OF SOUTH-
CENTRAL AZ. THIS INCLUDES THE GREATER PHOENIX METROPOLITAN
AREA...GLOBE...THE SALT RIVER RECREATIONAL LAKES AS WELL AS
INTERSTATE 10 THROUGHOUT THE AREA.

* TIMING...THIS AFTERNOON AND EVENING.

* WINDS...WESTERLY AT 20 TO 30 MPH WITH GUSTS OF 40 TO 45 MPH.

* IMPACTS...HAZARDOUS DRIVING CONDITIONS DUE TO AREAS OF REDUCED
VISIBILITY IN BLOWING DUST AS WELL AS STRONG CROSS WINDS ON NORTH-
SOUTH ORIENTED ROADWAYS. AFFECTED ROADWAYS INCLUDE INTERSTATE 10
AND U.S. HIGHWAY 60.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

WINDS THIS STRONG CAN MAKE DRIVING DIFFICULT...ESPECIALLY FOR
HIGH PROFILE VEHICLES. IN ADDITION...STRONG WINDS OVER DESERT
AREAS COULD RESULT IN BRIEFLY LOWERED VISIBILITIES TO WELL UNDER
A MILE AT TIMES IN BLOWING DUST OR BLOWING SAND. USE EXTRA
CAUTION.

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WWUS85 KPSR 252114

RFWPSR

URGENT - FIRE WEATHER MESSAGE

NATIONAL WEATHER SERVICE PHOENIX AZ

214 PM MST MON APR 25 2016

AZZ131>133-CAZ231-260300-

/O.CON.KPSR.FW.W.0004.000000T0000Z-160426T0300Z/

ARIZONA FIRE WEATHER ZONE 131

YUMA/MARTINEZ LAKE AND VICINITY/LOWER COLORADO RIVER VALLEY AZ-

ARIZONA FIRE WEATHER ZONE 132

SOUTH-CENTRAL AND SOUTHWEST DESERTS-

ARIZONA FIRE WEATHER ZONE 133

SOUTHERN GILA COUNTY/TONTO NATIONAL FOREST FOOTHILLS-

CALIFORNIA FIRE WEATHER ZONE 231

LOWER COLORADO RIVER VALLEY CA-

214 PM MST MON APR 25 2016 /214 PM PDT MON APR 25 2016/

...RED FLAG WARNING REMAINS IN EFFECT UNTIL 8 PM MST /8 PM PDT/
THIS EVENING FOR STRONG WINDS...LOW RELATIVE HUMIDITY AND HIGH TO
VERY HIGH FIRE DANGER FOR SOUTHWEST AND SOUTH-CENTRAL ARIZONA AND
THE LOWER COLORADO RIVER VALLEY...

* AFFECTED AREA...IN ARIZONA...YUMA/MARTINEZ LAKE AND
VICINITY/LOWER COLORADO RIVER VALLEY AZ...SOUTH-CENTRAL AND
SOUTHWEST DESERTS AND SOUTHERN GILA COUNTY/TONTO NATIONAL
FOREST FOOTHILLS. IN CALIFORNIA...LOWER COLORADO RIVER VALLEY
CA.

* WINDS...WEST 20 TO 30 MPH WITH GUSTS UP TO 45 MPH.

* TIMING...EARLY AFTERNOON THROUGH MID EVENING TODAY.

* RELATIVE HUMIDITY...AS LOW AS 5 PERCENT.

* IMPACTS...FUELS ARE DRY AND FIRE DANGER IS HIGH TO VERY HIGH.
THESE CONDITIONS...COMBINED WITH LOW RELATIVE HUMIDITY AND
STRONG WINDS WILL LEAD TO WIDESPREAD HAZARDOUS FIRE WEATHER
CONDITIONS.

PRECAUTIONARY/PREPAREDNESS ACTIONS...

PLEASE ADVISE THE APPROPRIATE OFFICIALS AND FIRE CREWS IN THE
FIELD OF THIS RED FLAG WARNING.

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NATIONAL WEATHER SERVICE PHOENIX IS ON THE INTERNET AT
WEATHER.GOV/PHOENIX

WWUS85 KPSR 252205

AWWPHX

AZZ023-260100-

AIRPORT WEATHER WARNING FOR SKY HARBOR AIRPORT

NATIONAL WEATHER SERVICE PHOENIX AZ

305 PM MST MON APR 25 2016

...AIRPORT WEATHER WARNING FOR SKY HARBOR AIRPORT IN EFFECT UNTIL
600 PM MST...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS ISSUED AN AIRPORT WEATHER
WARNING FOR SKY HARBOR AIRPORT FOR STRONG GUSTY WINDS.

STRONG GUSTY WEST WINDS WILL CONTINUE THROUGHOUT THIS AFTERNOON...AND
INTO THE EARLY EVENING. GUSTS WILL RANGE 40 TO 45 MPH AT
TIMES...BEGINNING TO DIMINISH AFTER 6 PM MST.

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FXUS65 KPSR 252206

AFDPSR

AREA FORECAST DISCUSSION

NATIONAL WEATHER SERVICE PHOENIX AZ

306 PM MST MON APR 25 2016

.SYNOPSIS...

SEVERAL WEATHER DISTURBANCES WILL PASS THROUGH THE REGION THIS WEEK
BRINGING OCCASIONALLY STRONGER WIND GUSTS...COOLER THAN NORMAL
TEMPERATURES...AND A REMOTE CHANCE OF AN ISOLATED SHOWER. THE FIRST
SYSTEM WILL MOVE INTO THE AREA TODAY WITH STRONG WINDS AND SOME
BLOWING DUST. THE NEXT AREA OF LOW PRESSURE WILL AFFECT THE REGION
THURSDAY WITH MORE BREEZY CONDITIONS AND AN OUTSIDE CHANCE OF
SHOWERS AND THUNDERSTORMS OVER HIGHER TERRAIN NORTH AND EAST OF
PHOENIX. THE FINAL DISTURBANCE WILL ROTATE TOWARDS THE REGION BY THE
END OF THE WEEKEND.

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.DISCUSSION...

POTENT SPRING TROUGH AND UPPER LOW CURRENTLY MOVING THROUGH THE

SOUTHWEST THIS AFTERNOON WITH STRONG GUSTY WINDS...DUST LOFTED AND CROSSING AREA ROADWAYS IN THE USUAL HOT SPOTS AND A TIGHTLY PACKED BOUNDARY BETWEEN DRY SUBSIDENT FLOW AND NARROW MOISTURE. DEWPOINTS ACROSS THE SOUTH-CENTRAL AZ DESERTS HAVE DIPPED AS LOW AS THE SINGLE DIGITS...WHILE THE COOLER TEMPERATURES ALOFT...STRONG 500MB HEIGHT FALLS AND LIMITED BUT NARROW MOISTURE BAND HAS ALLOWED SOME SNOW SHOWERS TO DEVELOP ACROSS NORTHERN AZ AND THE FLAGSTAFF AREA. WINDS THIS AFTERNOON HAVE GUSTED IN THE 30 TO 40 MPH FOR MANY OF THE LOWER DESERT SITES AND WILL CONTINUE INTO THE EVENING AS THE UPPER JET STREAK AND A SECONDARY VORT MAX CONTINUE TO TRACK ACROSS AZ. INITIAL VORT/FRONT BOUNDARY CLEARING OUT OF CENTRAL AZ NOW...WITH A SECONDARY POCKET OF LL TO ML FRONTOGENETICAL FORCING COMING THROUGH WITH THAT SECOND VORT LOBE TIMED INTO THE REGION LATER THIS EVENING AND OVERNIGHT. LATEST MODEL GUIDANCE SUGGEST THE SECONDARY VORT MAX WILL BEGIN TO DIG INTO SOUTHERN CA WHILE PIVOTING/BUCKLING THE UL JET AND PVU GRADIENT/BOUNDARY BACK ACROSS CENTRAL AZ DURING THE EVENING...KEEPING STRONG GUSTY WINDS IN THE FORECAST WELL AFTER SUNSET. CAA INTO THE REGION THROUGH MUCH OF THE ATMO COLUMN...LATEST 500MB TEMPS IN THE -22 TO -24 C RANGE OVER THE CENTRAL PART OF THE FORECAST AREA PER AMDAR SOUNDINGS...WILL ALLOW FOR A COOLER OVERNIGHT TEMPERATURE FORECAST IN SPITE OF CONTINUALLY MIXED CONDITIONS WITH THE WINDS. THE COLD CORE ALOFT IN CONJUNCTION WITH A VERY NARROW MOISTURE BOUNDARY COULD GEN UP SOME SHOWERS ACROSS THE WEST-CENTRAL AZ DESERTS INTO THE EVENING...ESPECIALLY AS THE PVU BAND BUCKLES ACROSS THE AREA BEFORE SUBSIDENCE FILLS IN BEHIND THE SECOND VORT BAND AND BEGINS TO STABILIZE THE AREA. WHERE PHOENIX OBSERVED POTENTIALLY THEIR FIRST 70F LOW TEMP OF THE YEAR...MORNING TEMPERATURES TUESDAY WILL BE 10 TO POSSIBLY 15 DEGREES COOLER. STRONG JET ENERGY ROUNDING THE BASE OF THE LONGWAVE TROUGH WILL RAPIDLY EJECT THE CIRCULATION CENTER EASTWARD ON TUESDAY IN A NEGATIVE TILT FASHION...SUPPORTING AN OUTBREAK OF SEVERE WEATHER THROUGHOUT THE CENTRAL AND SOUTHERN PLAINS. OVER THE SOUTHWEST...A DAMPENED SHORTWAVE RIDGE WILL BRIEFLY PREDOMINATE THE WEATHER PATTERN TUESDAY AND WEDNESDAY AS HEIGHTS ALOFT PARTIALLY REBOUND AHEAD OF ANOTHER COMBINATION OF DEEPENING VORTICITY CENTERS. NUMERICAL TEMPERATURE GUIDANCE DISPLAYS A SURPRISINGLY SMALL SPREAD YIELDING GOOD CONFIDENCE THAT READINGS WILL REMAIN IN A SLIGHTLY BELOW NORMAL CATEGORY.

WHILE THERE IS EXCELLENT AGREEMENT AMONG OPERATIONAL GLOBAL MODELS AND THEIR ASSOCIATED ENSEMBLE MEMBERS REGARDING THE OVERALL PATTERN DURING THE END OF THE WEEK...THERE IS STILL UNDERSTANDABLE DISCREPANCIES WITH RESPECT TOTIMING AND ORIENTATION OF DISCRETE FEATURES INCORPORATED IN THE WAVE TRAIN. TRENDS AMONG MODELS SEEMS TO BE SIDING TOWARDS A MORE RAPID APPROACH AND AMPLIFICATION OF THE NEXT WEATHER SYSTEM OVER CNTRL/NRN ARIZONA THURSDAY...WHICH SEEMS APPROPRIATE GIVEN A 110+KT JET RAPIDLY TRANSLATING DOWN THE WESTERN SIDE OF THE TROUGH AXIS. ALSO PREFER THE DETERMINISTIC ECMWF TYPE SOLUTION SUGGESTING 2 DISTINCT VORTICITY CENTERS CAPTURED IN THE FLOW REGIME AND ENHANCING VERTICAL MOTION FIELDS THROUGH THE REGION. WHILE THE TRAJECTORY OF THIS WAVE IS NOT OPTIMAL FOR WIDESPREAD RAINFALL...THERE ARE INDICATIONS OF SOME MOISTURE BEING SWEEPED INTO THE LOWER/MIDDLE ATMOSPHERE. FORECAST BUFR SOUNDINGS SHOW THE COMBINATION OF THE ANOMALOUS COLD CORE SPREADING OVER 5 G/KG BOUNDARY LAYER MOISTURE PROFILES YIELDING AROUND 200 J/KG MLCAPE DURING PEAK HEATING. GIVEN A FAVORABLE UPSLOPE SWLY WIND COMPONENT ADDING ADDITIONAL LIFT...A FEW SHOWERS/STORMS WILL BE POSSIBLE THURSDAY AFTERNOON NORTH AND EAST OF PHOENIX.

ENSEMBLE SPREAD GROWS SOMEWHAT LARGER BY THE WEEKEND THOUGH THE MAJORITY OF MEMBERS SUGGEST MORE ENERGY DIGGING TOWARDS THE SOUTHWEST AND REINFORCING LOWER HEIGHTS. AT THIS TIME GIVEN THE UNCERTAINTY...DID NOT GET TOO OVERZEALOUS WITH RAINFALL CHANCES OR MAGNITUDE OF COOLING YET IT IS CONCEIVABLE THAT MUCH COOLER AND UNSETTLED WEATHER WILL AGAIN GRACE THE REGION EARLY NEXT WEEK.

&&

.AVIATION...

SOUTH-CENTRAL ARIZONA INCLUDING KPHX...KIWA AND KSDL...
STRONG WESTERLY WINDS ASSOCIATED WITH A COLD FRONT MOVING ACROSS THE REGION WILL BEGIN TO DIMINISH AFTER SUNSET...WITH WIND SPEEDS LIKELY TO FALL AOB 10 KNOTS BY MIDNIGHT. A BRIEF PERIOD OF LIGHT EASTERLY WINDS IS LIKELY DURING THE EARLY TO MID-MORNING HOURS ON TUESDAY BEFORE REVERTING BACK TO A WESTERLY DIRECTION...IN THE 10-15KT RANGE...BY TUESDAY AFTERNOON. DRY CONDITIONS...WITH MAINLY CLEAR SKIES TO PREVAIL THROUGH THE TAF PERIOD...EXCEPT FOR POSSIBLE SLANT-RANGE VISIBILITY ISSUES FOR INBOUND AIRCRAFT DURING THE EVENING HOURS DUE TO LOFTED BLOWING DUST.

SOUTHEAST CALIFORNIA/SOUTHWEST ARIZONA INCLUDING KIPL AND KBLH...
STRONG WESTERLY WINDS AND AREAS OF BLOWING DUST ASSOCIATED WITH UPPER LOW CENTER MOVING ACROSS THE REGION WILL BEGIN TO DIMINISH AFTER SUNSET...WITH WIND SPEEDS LIKELY TO FALL AOB 15 KNOTS BY MIDNIGHT...WITH LIGHTER WESTERLY TO SOUTHWESTERLY WINDS PREVAILING THROUGH THE REST OF THE NIGHT AND INTO TUESDAY. DRY CONDITIONS...WITH MAINLY CLEAR SKIES TO PREVAIL THROUGH THE TAF PERIOD.

AVIATION DISCUSSION NOT UPDATED FOR AMENDED TAFS.

&&

.FIRE WEATHER...

THURSDAY THROUGH MONDAY...

ANOTHER STRONG PACIFIC LOW PRESSURE SYSTEM TO BRING WELL-BELOW NORMAL TEMPERATURES TO THE REGION FROM WEDNESDAY ONWARD INTO FRIDAY...ALONG WITH GUSTY WINDS...AND EVEN A SLIGHT CHANCE FOR SHOWERS. HOWEVER...ELEVATED HUMIDITIES DURING THIS PERIOD WILL LIKELY KEEP FIRE DANGER LEVELS BELOW CRITICAL THRESHOLDS. DRY CONDITIONS AND SOMEWHAT WARMER TEMPERATURES...NEAR SEASONAL NORMALS...TO RETURN ON SATURDAY AS HIGH PRESSURE ATTEMPTS TO REBUILD OVER THE REGION FROM THE WEST...BUT WITH AFTERNOON BREEZES REMAINING A BIT STRONGER THAN NORMAL...AS WINDS ALOFT REMAIN AT ELEVATED LEVELS. ANOTHER LOW PRESSURE SYSTEM MOVING INTO THE REGION DURING THE SUNDAY-MONDAY TIME PERIOD TO BRING BACK COOLER TEMPERATURES...ELEVATED WINDS AND HUMIDITIES...AND EVEN A SLIGHT CHANCE FOR SHOWERS OVER HIGHER TERRAIN OF SOUTH-CENTRAL ARIZONA.

&&

.SPOTTER INFORMATION STATEMENT...

SPOTTER ACTIVATION IS NOT EXPECTED.

&&

.PSR WATCHES/WARNINGS/ADVISORIES...

AZ...BLOWING DUST ADVISORY UNTIL 10 PM MST THIS EVENING FOR AZZ020-025>028.

RED FLAG WARNING UNTIL 8 PM MST THIS EVENING FOR AZZ131>133.

WIND ADVISORY UNTIL 10 PM MST THIS EVENING FOR AZZ020>028.

CA...BLOWING DUST ADVISORY UNTIL 10 PM PDT THIS EVENING FOR CAZ031-033.

RED FLAG WARNING UNTIL 8 PM PDT THIS EVENING FOR CAZ231.
WIND ADVISORY UNTIL 10 PM PDT THIS EVENING FOR CAZ030>033.

&&

\$\$

VISIT US ON FACEBOOK...TWITTER...AND AT WEATHER.GOV/PHOENIX
DISCUSSION...NOLTE/MO
AVIATION...PERCHA
FIRE WEATHER...PERCHA

WWUS75 KPSR 260344

NPWPSR

URGENT - WEATHER MESSAGE

NATIONAL WEATHER SERVICE PHOENIX AZ

844 PM MST MON APR 25 2016

AZZ020-025>028-CAZ031-033-260445-

/O.CAN.KPSR.DU.Y.0006.000000T0000Z-160426T0500Z/

/O.CAN.KPSR.WI.Y.0008.000000T0000Z-160426T0500Z/

LOWER COLORADO RIVER VALLEY AZ-YUMA/MARTINEZ LAKE AND VICINITY-

SOUTHWEST DESERTS-SOUTHWEST MARICOPA COUNTY-

NORTHWEST AND NORTH CENTRAL PINAL COUNTY-

LOWER COLORADO RIVER VALLEY CA-IMPERIAL COUNTY-

INCLUDING THE CITIES OF...EHRENBERG...PARKER...

FORTUNA FOOTHILLS...SAN LUIS...SOMERTON...YUMA...DATELAND...

TACNA...WELLTON...GILA BEND...APACHE JUNCTION...CASA GRANDE...

COOLIDGE...FLORENCE...BLYTHE...BRAWLEY...CALEXICO...EL CENTRO...

GLAMIS...IMPERIAL...THE SALTON SEA

844 PM MST MON APR 25 2016 /844 PM PDT MON APR 25 2016/

...BLOWING DUST ADVISORY IS CANCELLED...

...WIND ADVISORY IS CANCELLED...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS CANCELLED THE BLOWING
DUST ADVISORY. THE WIND ADVISORY HAS BEEN CANCELLED.

THE WIND AND BLOWING DUST ADVISORIES ISSUED EARLIER WERE CANCELLED
AT 830 PM MST.

STRONG WINDS THAT AT TIMES GUSTED TO BETWEEN 35 AND 45 MPH WERE
DIMINISHING MONDAY EVENING...COMING UNDER WIND ADVISORY CRITERIA.
HOWEVER...BREEZY WEST TO NORTHWEST WINDS IN THE 15 TO 25 MPH RANGE
SHOULD CONTINUE TO BLOW THROUGH EARLY TUESDAY MORNING.

\$\$

AZZ021>024-CAZ030-032-260445-

/O.CAN.KPSR.WI.Y.0008.000000T0000Z-160426T0500Z/

WEST CENTRAL DESERTS-NORTHWEST MARICOPA COUNTY-

GREATER PHOENIX AREA-

SOUTHERN GILA COUNTY/TONTO NATIONAL FOREST FOOTHILLS-

JOSHUA TREE NATIONAL PARK-RIVERSIDE COUNTY/EASTERN DESERTS-

INCLUDING THE CITIES OF...BOUSE...QUARTZSITE...SALOME...BUCKEYE...

LAKE PLEASANT...MORRISTOWN...NEW RIVER...TONOPAH...WICKENBURG...

CAREFREE...CAVE CREEK...CHANDLER...FOUNTAIN HILLS...GILBERT...

GLENDALE...MESA...PEORIA...PHOENIX...SCOTTSDALE...SUN CITY...

TEMPE...GLOBE...MIAMI...SAN CARLOS...SUPERIOR...

TOP-OF-THE-WORLD...ALSO INCLUDING APACHE...BARTLETT...CANYON...

HORSESHOE...ROOSEVELT...AND SAGUARO LAKES...

COTTONWOOD VISITOR CENTER...KEYS VIEW...LOST HORSE...

CHIRIACO SUMMIT...DESERT CENTER...EAGLE MOUNTAIN

844 PM MST MON APR 25 2016 /844 PM PDT MON APR 25 2016/

...WIND ADVISORY IS CANCELLED...

THE NATIONAL WEATHER SERVICE IN PHOENIX HAS CANCELLED THE WIND
ADVISORY AT 830 PM MST.

STRONG WINDS THAT AT TIMES GUSTED TO BETWEEN 35 AND 45 MPH WERE
DIMINISHING MONDAY EVENING...COMING UNDER WIND ADVISORY CRITERIA.
HOWEVER...BREEZY WEST TO NORTHWEST WINDS IN THE 15 TO 25 MPH RANGE
SHOULD CONTINUE TO BLOW THROUGH EARLY TUESDAY MORNING.
\$\$

FXUS65 KPSR 260348
AFDPSR

APPENDIX C

NOTICE OF PUBLIC COMMENT PERIOD

**Request for Public Comments on Exceptional Events in the Maricopa County
(Greater Phoenix) PM₁₀ Nonattainment Area**

In 2005, Congress identified a need to account for events that result in exceedances of the National Ambient Air Quality Standards (NAAQS) that are exceptional in nature (e.g., not expected to reoccur or caused by acts of nature beyond man-made controls.) In response, EPA promulgated the Exceptional Events Rule (EER) to address exceptional events in 40 CFR Parts 50 and 51 on March 22, 2007 (72 FR 13560). On October 3, 2016, EPA released final revisions to the exceptional events rule. The EER allows for states and tribes to “flag” air quality monitoring data as an exceptional event. If flagged, these data can be excluded from consideration in air quality planning if EPA concurs with the demonstration submitted by the flagging agency documenting that all procedural and technical requirements have been met.

Pursuant to 40 CFR 50.14(c)(3)(i), the Arizona Department of Environmental Quality (ADEQ) is soliciting comments on its final demonstration of an event that has caused elevated concentrations of PM₁₀ in the Maricopa County (Greater Phoenix) PM₁₀ Nonattainment area on 4/25/16, 5/27/16, 7/29/16, 9/27/16, 9/28/16. ADEQ has decided to flag these episodes based on this analysis. A copy of the demonstration is available for review beginning Monday, 7/31/17, on the ADEQ website at <http://www.azdeq.gov/programs/air-quality-programs/natural-exceptional-events-demonstration>. Interested parties can submit written comments throughout the comment period which will end at 5:00 p.m. on Thursday, 8/31/17. Any comments received will be responded to and forwarded to EPA with the final demonstration.

Written comments should be addressed, faxed, or e-mailed to:

Air Assessment Section, Arizona Department of Environmental Quality, 1110 W. Washington Street, 3415-A, Phoenix, AZ 85007, E-mail: exceptionalevents@azdeq.gov.

In addition to being available on-line, a copy of the analysis is available for review, Monday through Friday, 8:30 a.m. to 4:30 p.m., at the [ADEQ Records Management Center](#), 1110 W. Washington St., Phoenix, AZ, 85007, Attn: Records Center, (602) 771-4380, e-mail: recordscenter@azdeq.gov.

To request an auxiliary aid or service for accessible communication, please contact (602) 771-2215 or at co2@azdeq.gov or dial 7-1-1 for TTY/TTD Services.

6027712338ADEO

M21287094300101

07/31/17

\$ 920.55

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AD CHARGES								
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	Request for Public Comments on Exc (PO# ADSP012-023863:508)							
07/31	Classified - Daily	State Agency Public	6840	95.00	1	95	9.69	920.55
Total Invoice Charges								920.55
Total Amount Due								920.55



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Fax 1-877-943-0443

AFFIDAVIT OF PUBLICATION

ADEQ

1110 W WASHINGTON

Phoenix, AZ 85007

Order # 0008709430 # of Affidavits 1

P.O # ADSPO12-023863:508

Published Date(s):

07/31/17

STATE OF ARIZONA

COUNTY OF

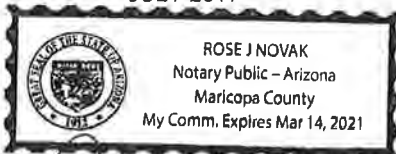
SS.

I, being first duly sworn, upon oath deposes and says: That I am the legal clerk of the Arizona Business Gazette, a newspaper of general circulation in the counties of Maricopa, Coconino, Pima and Pinal, in the State of Arizona, published weekly at Phoenix, Arizona, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates indicated

Sworn to before me this

31 ST day of

JULY 2017



Notary Public

Request for Public Comments on Exceptional Events in the Maricopa County (Greater Phoenix) PM10 Nonattainment Area

In 2005, Congress identified a need to account for events that result in exceedances of the National Ambient Air Quality Standards (NAAQS) that are exceptional in nature (e.g., not expected to reoccur or caused by acts of nature beyond man-made controls.) In response, EPA promulgated the Exceptional Events Rule (EER) to address exceptional events in 40 CFR Parts 50 and 51 on March 22, 2007 (72 FR 13560). On October 3, 2016, EPA released final revisions to the exceptional events rule. The EER allows for states and tribes to "flag" air quality monitoring data as an exceptional event. If flagged, these data can be excluded from consideration in air quality planning if EPA concurs with the demonstration submitted by the flagging agency documenting that all procedural and technical requirements have been met.

Pursuant to 40 CFR 50.14(c)(3)(i), the Arizona Department of Environmental Quality (ADEQ) is soliciting comments on its final demonstration of an event that has caused elevated concentrations of PM10 in the Maricopa County (Greater Phoenix) PM10 Nonattainment area on 4/25/16, 5/27/16, 7/29/16, 9/27/16, 9/28/16. ADEQ has decided to flag these episodes based on this analysis. A copy of the demonstration is available for review beginning Monday, 7/31/17, on the ADEQ website at www.azdeq.gov/environ/air/plan/nee.html. Interested parties can submit written comments throughout the comment period which will end at 5:00 p.m. on Thursday, 8/31/17. Any comments received will be responded to and forwarded to EPA with the final demonstration. Written comments should be addressed, faxed, or e-mailed to: Air Assessment Section, Arizona Department of Environmental Quality, 1110 W. Washington Street, 3415-A, Phoenix, AZ 85007. E-mail: exceptionalevents@azdeq.gov.

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Washington St., Phoenix,
AZ, 85007, Attn: Records
Center, (602) 771-4380, e-
-mail: recordscenter@azdeq
.gov.

To request an auxiliary aid
or service for accessible
communication, please con-
tact (602) 771-2215 or at co2
@azdeq.gov or dial 7-1-1 for
TTY/TTD Services.
Pub: July 31, 2017

APPENDIX D

EXCEPTIONAL EVENT INITIAL NOTIFICATION FORM

EE Initial Notification Summary Information

PM₁₀

Submitting Agency: Arizona Department of Environmental Quality

Agency Contact: **Brad Busby**

Date Submitted: **December 22, 2016**

Applicable NAAQS: **1987 PM₁₀**

Affected Regulatory Decision¹: **Maricopa County Non-Attainment**

(for classification decisions, specify level of the classification with/without EE concurrence)

Area Name/Designation Status: **Maricopa County – Phoenix (Serious)**

Design Value Period (list three year period): **2015-2017 and/or 2016-2018**

A) Information specific to each flagged monitor day that may be submitted to EPA in support of the affected regulatory decision listed above

Date of Event	Type of Event (high wind, volcano, wildfires/prescribed fire, other ²)	AQS Flag	Monitor AQS ID (and POC)	Monitor Name	Exceedance Concentration (with units)	Notes (e.g. event name, links to other events)
April 25, 2016	High Wind	RJ	04-013-4009-1	West 43 rd Ave.	172 µg/m ³	State of Arizona Exceptional Event Documentation of a High Wind Dust Event PM10 Exceedance on April 25, 2016 in the Maricopa County PM10 Nonattainment Area

B) Violating Monitors Information

(listing of all violating monitors in the planning area, regardless of operating agency, and regardless of whether or not they are impacted by EEs)

Monitor (AQS ID and POC)	Design Value (<u>without</u> EPA concurrence on any of the events listed in table A above)	Design Value (<u>with</u> EPA concurrence on all events listed in table A above)

¹ designation, classification, attainment determination, attainment date extension, or finding of SIP inadequacy leading to SIP call

² Provide additional information for types of event described as "other"

C) Summary of Maximum Design Value (DV) Monitor Information (Effect of EPA Concurrence on Maximum Design Value Monitor Determination) (Two highest values from Table B)

Maximum DV monitor (AQS ID and POC) <u>without</u> EPA concurrence on any of the events listed in table A above	Design Value 0.66	Design Value Monitor Glendale (04-013-2001-1)	Note: These monitor exceedances will likely be in a future EE high wind submittal for Sept. 27-28, 2016.
Maximum DV monitor (AQS ID and POC) <u>with</u> EPA concurrence on all events listed in table A above	Design Value 0.66	Design Value Monitor Glendale (04-013-2001-1)	Note: These monitor exceedances will likely be in a future EE high wind submittal for Sept. 27-28, 2016.

Note: The event in Table A is being submitted as the initial 2016 exceptional event demonstration due to the historical likelihood of additional high wind dust events occurring at the West 43rd Avenue monitor over the next few years. Additional 2016 events at different nonattainment area monitors have been flagged

in AQS as exceptional events, but are not the subject of this initial notification. Subsequent initial notification forms may be submitted to EPA as documentation of the additional 2016 events are pursued and prepared.